

November 1936

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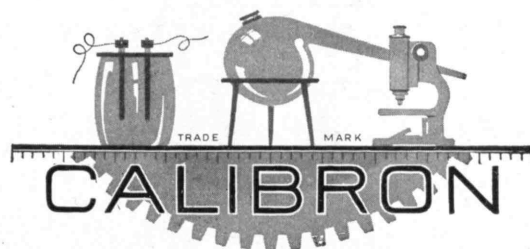
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THE TABULAR VIEW

TECHNOLOGY will forge ahead!" Thus began an editorial in the Boston *Evening Transcript* of October 15, the day following PRESIDENT COMPTON's presentation to the Corporation (page 15) of his comprehensive and courageous plan for expanding the facilities and services of the Institute. Continued the *Transcript*: "The President and Trustees have canvassed the Institute's whole present situation and future outlook. They have carefully determined what are the most pressing requirements, to sustain the Institute's progress and enlarge still further its usefulness. The needs being clear, Technology now goes forth to raise the funds to supply them, supremely confident that where there's a will there's a way. M.I.T. seems justified in that faith. . . . Simply to hold back and postpone current efforts because the goals of the future may be difficult to attain is the way to make no progress at all. Now as ever the road to advancement can be traveled only by those who set their feet firmly on an onward course, take the first steps courageously, and then continue the journey with everlasting persistence."

AS scientific big-game hunters whose armory consists mainly of spectrographs, DONALD H. MENZEL and JOSEPH C. BOYCE are intent on tracking down obscurities in our knowledge of the sun. In 1933 they joined forces, as astrophysicist and physicist, to study the spectra of gaseous nebulae and it was natural that they should again collaborate in a study of the 1936 eclipse even though it took them packing to Russia for dear life, as they narrate in their article beginning on page 19. Dr. Menzel is Associate Professor of Astronomy at the Harvard Observatory; Dr. Boyce, Assistant Professor of Physics at the Institute.

WE are happy to announce that two of the contributors to this issue, PHILIP M. MORSE (page 9) and SAMUEL V. CHAMBERLAIN, '18 (page 27), are joining the Staff of The Review as Editorial Associates, which means that they will regularly contribute signed and unsigned articles to our pages. Dr. Morse is an Assistant Professor in Technology's Department of Physics and a skillful expositor of the mysteries of his field. Mr. Chamberlain, who will cover the fine arts, is a distinguished etcher who latterly has added photography to the various other mediums in which he captures in permanent form the beauty he sees about him. At the present he is giving a series of lectures on print making in the School of Architecture. ¶ DONALD G. FINK, '33 (page 31), is Associate Editor of *Electronics*. Before joining the staff of that journal in 1934 he was a research assistant at the Institute, dividing his allegiance between Geology (doing large-scale electrical prospecting) and Electrical Engineering (working on the development of the cinema integrator). While an undergraduate he was Editor of *The Tech Engineering News* "to which experience," he writes, "I owe a great deal." ¶ PAUL COHEN '35, (page 13), was Editor of *The Tech* as an undergraduate, and like Mr. Fink, is turning that experience to good account.



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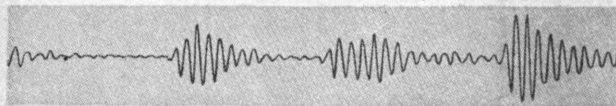
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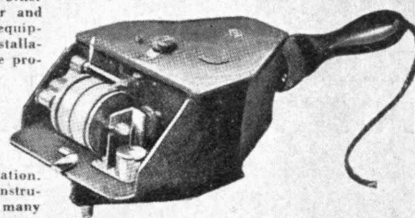
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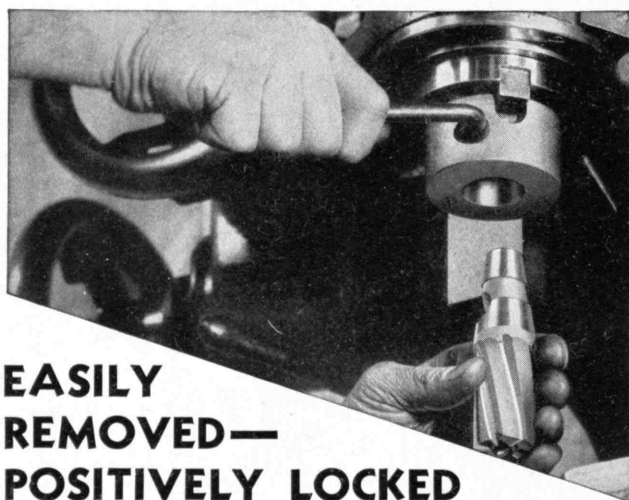
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MAIL RETURNS

Let There Be Light

Prompted by Malcolm G. Davis' recent article on electric utility rates, many letters were received by the Editor. We present below one of the letters which gives a viewpoint other than that set forth by Mr. Davis. To this letter we invited Mr. Davis to reply, and his answer will be found immediately after that of his critic.

FROM GREGORY M. DEXTER, '08:

The article in The Review for last May by Malcolm G. Davis on "The Story Behind Your Light Bill" has had my attention. Perhaps, in the interests of broad social policy, you will permit me to comment. He has presented a mathematical analysis but neglected to discuss those human reactions on which government policies are more likely to be based. He has, in addition, made several slips in reasoning which lead to doubt as to the soundness of his conclusions.

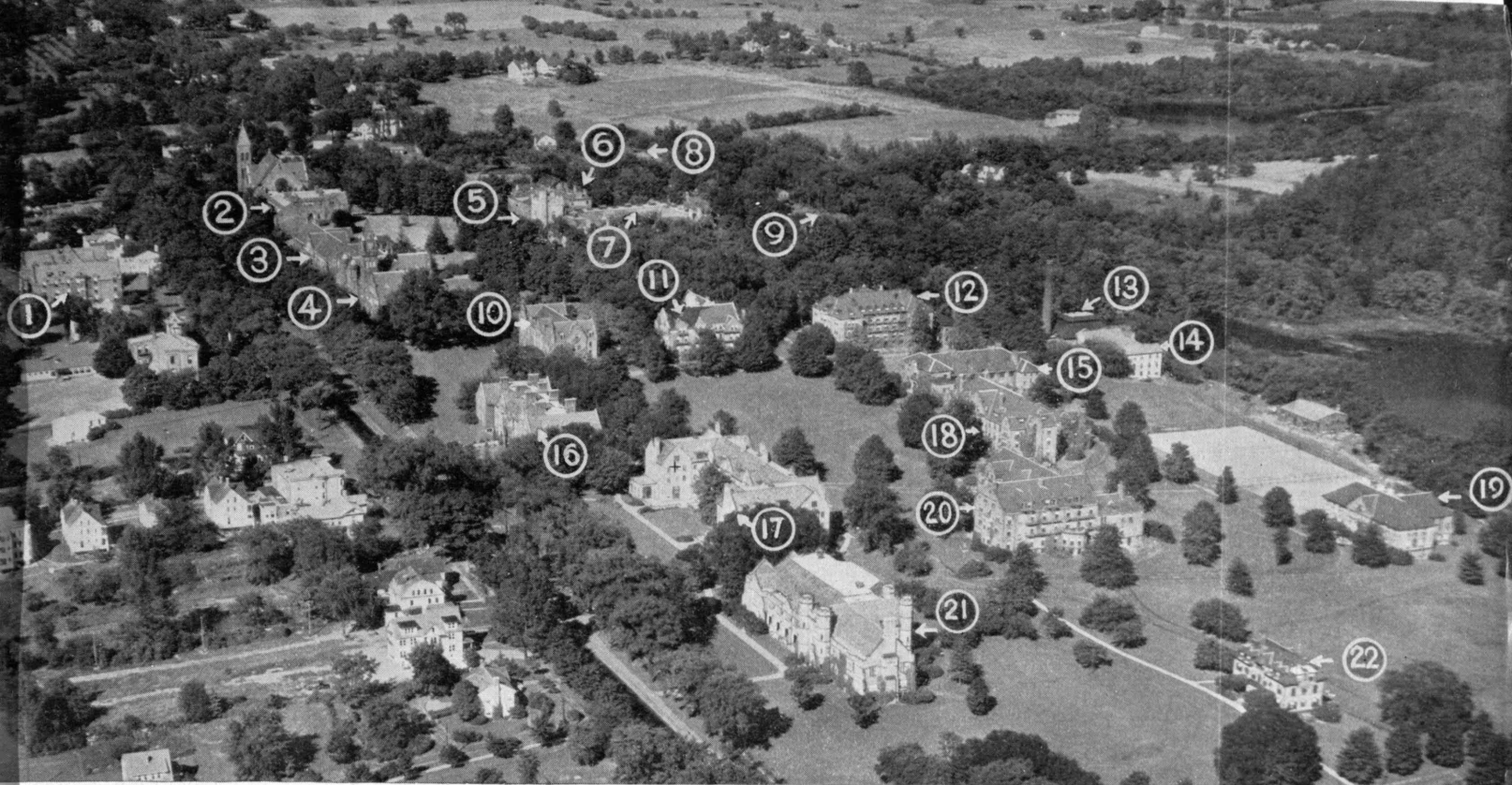
Much has been heard of late about the rights of investors in public utilities, but very little about obligations to the public. The management of a public utility is not a private enterprise but a trusteeship in which the rights of the public to as low rates as are economically possible are as important as the rights of investors to adequate returns. The two rights are in juxtaposition. Public utility executives have all too frequently favored the rights of the latter by taking advantage of every engineering, legal, political, and advertising trick at their command. Numerous investigations by state authorities, as in New York, and by Federal authorities have shown over and over again that this is so. Such a policy is likely to pay any executive in its effect on his salary while the opposite is only too likely to go unrewarded for a long time. That executives should do this is not surprising since no man can serve two masters. Unless this general disregard of their public trust by utility executives and their investors is overcome, increasing public ownership is certain in the face of any mathematical analysis.

Many rate cases are taken up with testimony by engineers and accountants in the employ of public utilities which is so unreasonable as to bring down on them the criticism of public service commissions and even the United States Supreme Court, as well as creating unfavorable public reaction. A public utility executive who tolerates such testimony violates his trusteeship, and the professional men who are parties to it lower their status to that of horse traders. Aside from this, rate cases are almost invariably long drawn out at the expense of the consumer, whoever wins. No wonder some voters are turning to municipal ownership as a solution.

Very little check is ever made by a public service commission of charges by a public utility to operating expenses, as in alterations of a distribution system which are really capital expenditures. There is some reason to believe that an appreciable percentage of the capital investment in our public utilities has been paid for as operating expenses by the public in the rates it was charged for service, although the public utilities have ever afterwards demanded a fair return on that investment. The New York Public Service Commission has sought for years sufficient funds to make a field check of charges to operating expenses as well as to capital. Public utility executives who were also trustees could cooperate with the commission to see that such funds were appropriated.

The accounting system in use by public utilities is open to criticism as inadequate for determination of distribution costs. Yet opposition by their executives to any change is common. It is often so phrased as to show no comprehension of the point at issue: cost accounting as a manufacturing executive knows it. Herein lies one secret of lower rates for domestic consumers.

The city manager form of government is now in force in several hundred communities. These city managers are, in general, high-grade, technically trained men who are thoroughly capable of running a municipal lighting plant. They seek opportunities to save their communities money, to raise the standard of living, and, at the same time, furnish better street lighting and more beautiful streets. Only the exceptionally well-managed and conservatively financed public utility can meet the competition which these men can offer. The monopoly on knowledge and skill which public utilities have claimed is no longer possible with the self-contained and even (Continued on page 4)



MOUNT HOLYOKE COLLEGE

Fairchild Aerial Surveys

CENTRAL HEAT CONTROL FOR 22 COLLEGE BUILDINGS

Webster Moderator System at Mount Holyoke First Large Installation of its Kind

CONTROL-BY-THE-WEATHER

In 1934, Mount Holyoke College, South Hadley, Mass., completed an extensive modernization of steam using facilities, including a Webster Moderator System for central heat control of 22 existing buildings of various age and equipment, many one-pipe, some two-pipe and two hot water installations.

"Control-by-the-Weather" is provided by automatic Outdoor Thermostats, supplemented by a central control (shown at right) including (a) lights to indicate functioning of control valves and accumulation of water in key radiators, (b) switches for remote shut-off, (c) Variators to increase or decrease steam delivery to any zone. This central control eliminates "cruising" of the campus by the operating force and permits observance of a definite operating schedule for each building.

A test demonstrated that the control system provides adequate facilities for effecting a 25 per cent reduction in heating expense. Further experience during 1935-36 has proved the value of the Webster Moderator System in effecting minimum steam consumption with minimum operating force and adequate heating.

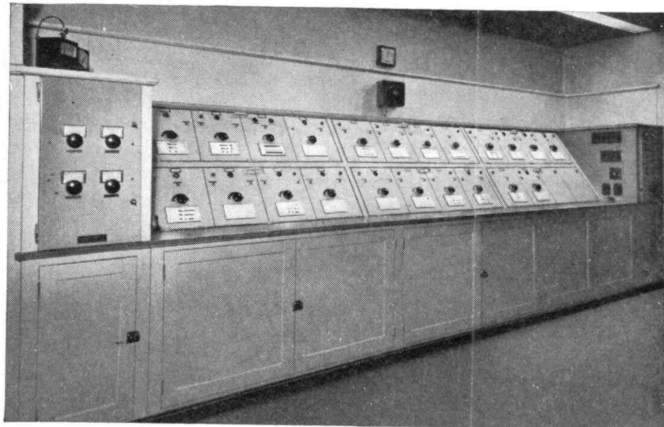
While Webster Moderator Control has been employed for smaller groups of buildings, this is the first large installation of its kind. It has been inspected and commented on by many leading engineers and operators. Results warrant the prediction that coordinated central control of the heating of large insti-

tutional groups will rapidly supplant past methods of uncoordinated control of separate buildings.

The control contract was executed by Warren Webster & Company, under the direction of Clyde W. Colby and the Office of Hollis French, associated consulting engineers for the college authorities. Fred T. Ley & Co., Inc., was the general contractor. Steam fitting was done by Holyoke Valve and Hydrant Company, prominent Massachusetts heating contractors.

The installation was described recently in *HEATING AND VENTILATING*, leading technical publication, in an article entitled "Economy of Unique Control System Demonstrated at Mt. Holyoke College Plant." Reprints of this informative article will be furnished gladly to anyone interested in further details.

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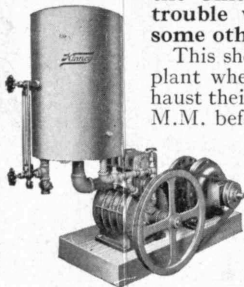
CENTRAL HEATING CONTROL

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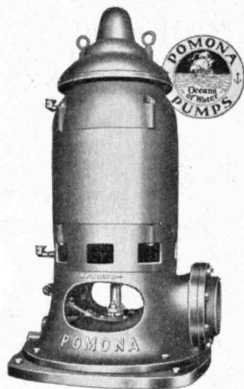
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MAIL RETURNS

(Continued from page 2)

automatically operated plants which are now coming on the market. A municipal plant can be operated just as efficiently as the taxpayers desire, and good government is by no means such a rarity, particularly in the smaller communities, as public utility executives apparently believe.

Much is made of the point that any possible saving to each consumer from a municipal plant is small. The real point is that such saving multiplied by the number of consumers in the community often makes a very large sum which would go far in paying for more paved highways, better schools, larger water supply, parks, and so on. My own village could save \$80,000 yearly at once and increase it over \$100,000 in a few years although paying all the overhead charges of a public utility. It is not an unusual circumstance.

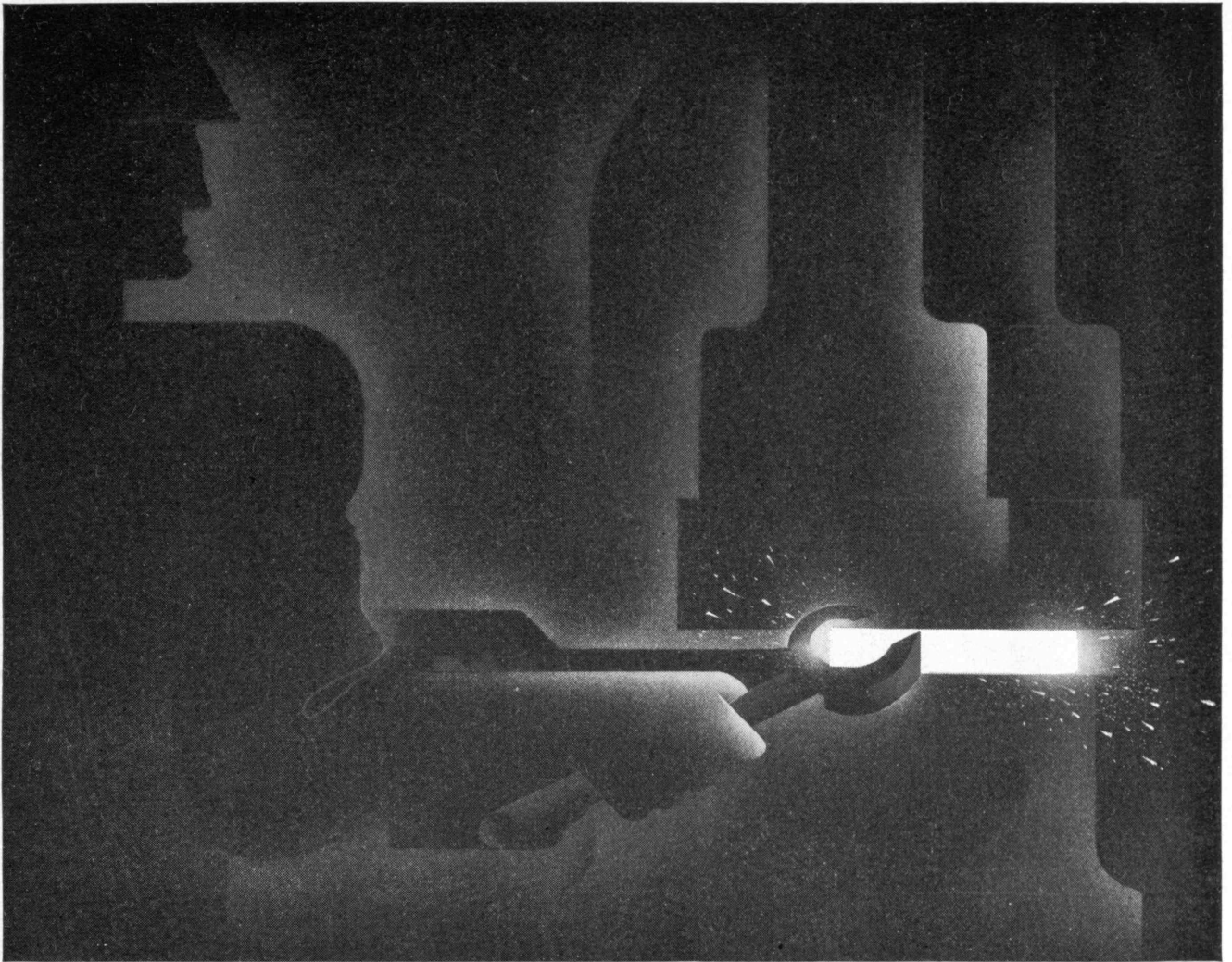
About 170 municipal lighting plants have come into existence since 1929. That indicates dissatisfaction by a good many voters and shows a trend to the condition in the waterworks field where about 90% of cities over 500,000 in population and about 80% of all communities under 10,000 control their water supply. Such ownership came about largely through failure of the privately owned water companies to keep abreast of demands for service at low cost which gave good fire protection, filtration of water, and ample supplies even in drought. Such ownership may come in electric light and power plants through failure to reduce rates as much and as promptly as technical progress makes possible and through failure to recognize the low differential costs for adequate and even beautiful street lighting which are possible with a municipal plant. Bargain rates at off-peak hours for domestic uses are possible under differential costs to an extent not yet understood and much less practiced.

More might be said as to the human reactions which Mr. Davis has overlooked in his analysis. Now for some of the slips in his reasoning: His argument is based on averages, although every engineer knows that the course of an industry is determined by the low-cost producer. It is only generally a question of average cost but always of how cheaply can the product be sold in comparison with what is now paid. That is the question in my village of 3,000 consumers, 80 miles of streets, and an average domestic consumption of 1,700 kilowatt hours yearly with no industrial load. We paid an average of 5.7 cents in 1935 and in 1937 we will pay an average of 5.0 cents. Yet a Diesel-engine lighting plant and distribution system could be built here for less than \$1,000,000. We could pay five per cent interest on the investment, retire the entire cost in 25 years, set aside 16% of the present revenues of the public utility from electricity in the village for taxes, and yet sell electricity for 3.5 cents per kilowatt hour. This is the sort of condition which leads to exasperation with both public service commissions and public utilities. It is only too common. Failure to cure it is bound to force more municipal lighting plants.

Many public utilities are burdened with long transmission lines which prevent in many cases the economic sale of electricity. The day of the isolated power plant has returned. The large central power station which served a large area was an economic necessity some years ago but is not today. Averages based on costs determined by such a set-up are misleading as to the possibilities of lower rates with a municipal plant serving a small community. Studies will frequently show today that more central stations are needed. See the article in *Electrical World* for April 13, 1935, by Alfred Iddles on "Planning New Capacity."

A comparison has been made between small municipal plants and small privately owned plants in a large system. Anybody who has had the pleasure of comparing some of the latter which are not in a very few large systems might reach a different conclusion as to the relative efficiency of the small municipal plant. A study, furthermore, of the power plants and distribution systems of our largest public utilities will show considerable obsolete equipment carried on the books for which there is little economic justification. Greater New York has several of these plants which should have been extensively remodelled or scrapped years ago.

The attempt has been made to show that the average rates of municipal plants are actually higher than those of privately owned plants. Many municipal plants, however, (Continued on page 48)



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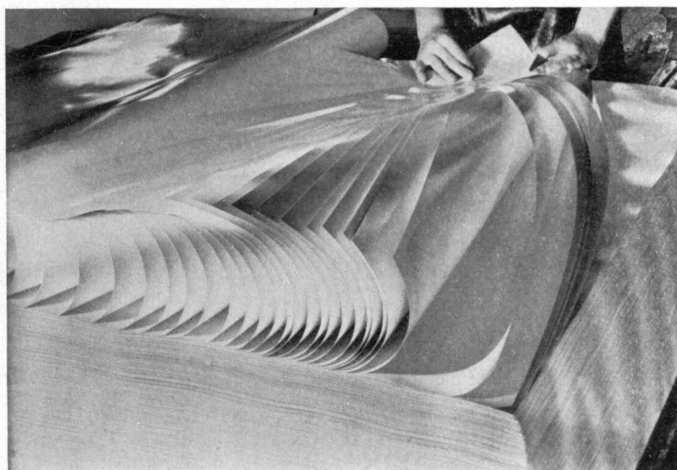
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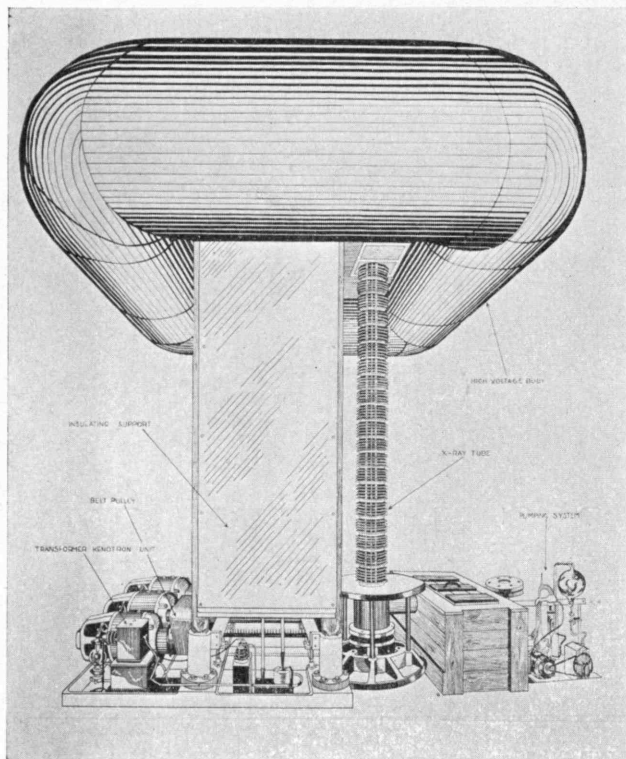
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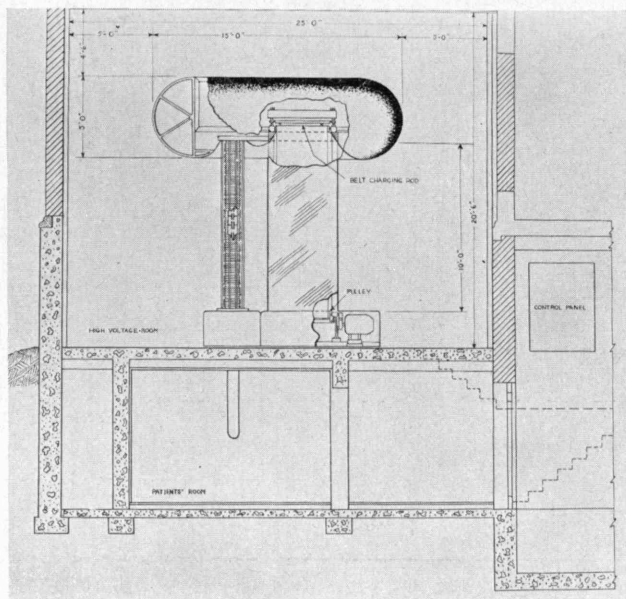
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As the adjacent drawings show, the big cascade-type x-ray tube is attached to the generator in a vertical position and parallel to the insulating column, the upper end being in contact with the lower side of the aluminum terminal, while the lower end projects into an underground treatment room directly beneath the generator



GREATER THAN ALL THE AVAILABLE RADIUM

ABOVE are presented the first published drawings of the new electrostatic generator, capable of producing penetrating short-wave x-rays at a potential of one million volts for medical research and treatment of malignant disease, which is nearing completion at the Collis P. Huntington Memorial Hospital in Boston. Announcement of this new tool of medical science, which was designed by Professor John G. Trump, '33, of Technology and built under his supervision, was made last month by Dr. Richard Dresser of the Huntington Hospital.

The new generator, which is expected to be ready for operation this winter, possesses two distinct advantages over existing equipment: First, it will make possible the treatment of deep-seated malignancy because high-voltage x-rays have greater penetrability than low-voltage rays. It is expected that many types of malignant disease which cannot be treated effectively with equipment now in use will yield to the more penetrating short-wave rays produced by the new machine.

A second advantage is indicated by accumulated evidence that high-voltage x-rays are more specific in their action on diseased tissue than the relatively low-voltage rays now in general use. In this respect the effects of high-voltage x-rays are similar to those of the gamma rays of radium. The new x-ray generator, however, will be capable of producing a greater intensity of these rays than the combined output of all the available radium in the world. The generator will be equipped with current and voltage control so that the potential can be regulated over the full range from two hundred thousand to one million volts.

The x-ray tube is made up of 20 porcelain sections of about 12 inches diameter, totaling 10 feet in length. Diaphragms are provided between sections to focus the high-speed electron stream in its passage from the upper end of the tube to the target and also to break up the total potential which must be insulated between the two ends of the tube. The base of the porcelain assembly is supported by a steel cylinder, which projects through the floor of the generator room into the treatment room, the arrangement being continuously evacuated by the high-speed pumping system. The filament assembly is located on the upper end of the porcelain column and is so arranged that replacement of a filament will involve only a short interruption in service.

A demountable, water-cooled target of gold upon which the high-speed electrons impinge is attached to the bottom of the steel cylinder. Both cylinder and target are at ground potential and are surrounded by a thick armor of lead for shielding against direct radiation. The beam of penetrating x-rays emerges through a port in the lead shielding in the direction of the patient being treated.

The total power input of about 15 kilowatts required by this x-ray generator is small compared with other types of high-voltage x-ray installations, and since the target is to be at ground potential, it will be possible to treat patients with complete safety at various distances from the target down to the minimum of about one centimeter. Dr. Dresser, who is primarily responsible for the installation in Huntington Memorial Hospital, will have charge of the x-ray machine's operation for research and treatment.



THE TECHNOLOGY REVIEW

Vol. 39, No. 1



November, 1936

The Trend of Affairs

Waves, Waves, Everywhere

BY PHILIP M. MORSE

THE study of wave motion may be a matter of extreme discomfort to the occasional marine traveler, or a matter of esthetic enjoyment to the *revue* spectator, but it is a matter of bread and butter for the practicing physicist. To his occasional discouragement, practically everything he has studied has "gone wavy on him." Since the time of the Greeks it has been known that sound is wave motion, but it was not until about a hundred years ago that scientists were forced to admit that light is also wave motion, and only ten years ago was it thrust upon them that all matter is wave motion. So it has really become a serious affair.

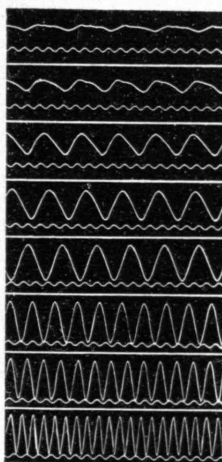
It is an annoying affair also, for waves are confoundingly slippery things to handle: They spread out so. A discrete particle can be tied down and branded, so to speak, but a wave cannot be confined in a small space for very long, nor can it be distinguished easily from other waves. When one finds the position of a particle at each instant of time — three coördinates as functions of time — the whole story is told; the motion of the particle is known. In the case of the wave, however, the displacement of each and every part of the wave must be found for each instant of time before we can say that we know what the wave is doing.

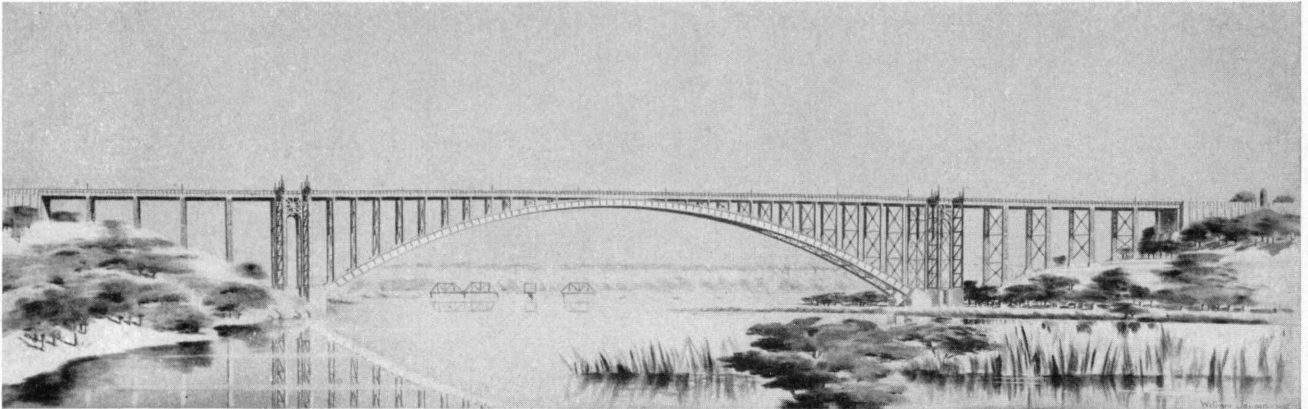
Even the engineer is having to struggle with problems of wave motion lately. The electrical engineer has had his troubles for some time with radio transmission and with voltage waves on long power lines. Recently, the mechanical engineer has begun to be bothered. For a long time most mechanical

engineers shunned the study of vibrations of any kind, until the increasing speed of machinery and the need for reduced weight have forced it on them. Since then, most of them have hoped that the vibrating bodies they must study would vibrate as a unit, *i.e.*, as a particle, but this wish cannot be satisfied in many cases. The propeller of an airplane, for instance, or the gas in the cylinder of a gasoline engine, does not vibrate as a whole; each part has its own vibration. The motion is wave motion and must be treated as such to be understood.

The work of Professor C. S. Draper, '26, here at Technology has brought out this fact and, in addition, is showing how wave studies of vibrating machines can be made. Draper's electromagnetic vibration-microphone, his high-speed oscillograph, and the M.I.T. engine indicators have clarified the problem of knock or detonation in a gasoline engine cylinder. They have shown that the knock is due to very high intensity standing waves of sound, set up in the cylinder by an extra rapid combustion of the last bit of fuel there. A study of the details of the form of these waves, the various frequencies present, and so on, makes it possible for him to learn some of the properties of the detonating explosions. Another field where the Draper vibration apparatus has shown its value is in the study of the torsional waves in airplane propeller shafts.

Another point of difference between particle and wave motion is in the number of different resonance frequencies each possesses. A particle, vibrating in one direction, has only one frequency to which it will respond strongly — one resonance frequency — whereas there are an infinite set of resonance frequencies for even the simplest sort





Robinson and Steinman, Engineers

The Henry Hudson Bridge over the Harlem River in New York, now about to join the magnificent company of escapeways from Manhattan. Its 800-foot span is the longest hingeless arch and the longest arch of plate-girder construction in the world

of waves. This property is utilized in an interesting and important study of the intake system of a gasoline engine, done at Technology by R. H. Boden, '34, under the direction of Professor E. S. Taylor, '24. Their work shows that standing waves of sound are set up in the intake system of an engine and that if the length of the intake pipe is adjusted so that it resonates to the frequency of the valve motion, pressure oscillations as large as half an atmosphere can occur in the pipe. There are a number of proper lengths, corresponding to the various resonance frequencies of the wave, each of them giving a different form for the fluctuation of pressure at the intake valve. In a few of these resonance cases, the wave has a supercharging effect, pumping more fuel into the cylinder than can ordinarily get in, thereby increasing the power of the engine. Boden's work shows that a mere alteration of the shape of the standing sound waves, by a change in design of the intake system, can increase the horse-power output of an engine by as much as 15%. It indicates that even the noise in the intake of the engine — the squeal of the pig, so to speak — can be made to do useful work.

The resonance frequencies of sound in a room affect the acoustic properties of the room. If they are irregularly spaced, more resonances being in one range of frequency than in another, the room will have poor acoustic qualities. The uniformity of response of the room and the amount of reverberation present depend on the shape of the room and on the amount and distribution of sound-absorbing material on its walls. Studies of these properties, so important for broadcast, phonograph-recording, and sound-movie studios, are being carried on at Technology under the direction of Professor R. D. Fay, '17.

For good radio, phonograph, and talkie reproduction, good loud-speakers are necessary. Here again the properties of sound waves must be taken into account. Although loud-speaker horns have been used for some time, the exact behavior of the waves inside the horn is not yet fully understood. Many acoustical defects occur in most horns: The waves pile up in the throat of the horns so that their shape is altered; long waves have more trouble getting out of the mouth than do short ones; both effects producing a distortion of the sound. Moreover, once out, the short waves travel straight out

from the horn in a beam, so that a person standing to one side hears only the low-frequency, long-wave parts of the sound — a meaningless grumble. Studies of wave motion in horns are being made here at Technology: experimental studies by Dr. W. M. Hall, '28, and theoretical studies under the direction of Professor J. A. Stratton, '23. It is hoped that they will result in improvements in loud-speaker design.

Although the behavior of waves is annoyingly complicated, there is one point of simplicity which occasionally consoles the research worker. It is that wave motion in one medium behaves the same as wave motion in any other medium: Radio waves can be run through pipes and radiated out of horns just as sound waves can; electron waves scatter from atoms in the same way as light waves scatter from the finely ground particles of pigment in a paint; the calculations concerning the effect of sound waves on a ribbon microphone can be utilized in the study of the behavior of light as it goes through a narrow slit.

As a consequence, any conclusions drawn from a general study of wave motion can be applied in a very large number of fields. Calculations of wave motion of elliptic form, carried on by Professor Stratton for the past three years, have already been applied by Dr. James B. Fisk, '31, to the study of the collisions between electrons and the molecules of hydrogen, oxygen, nitrogen, and chlorine gases; are being applied by J. E. Freehafer, '34, to the study of sound waves in horns; and will be applied to the study of the generation of radio waves, the reaction of sound waves on a diaphragm, and the scattering of light by colloidal suspensions.

An unusual and important example of the similarity between waves in different media is given by the experiments of W. L. Barrow, '29, who is running short-wave radio waves through long pipes and out of horns, just as though they were sound waves. The radio waves, however, travel faster and farther than sound waves, and it is possible that piped radio waves will become important in long-distance communication. The use of horns to direct and concentrate short-wave radio signals is another possibility indicated by Barrow's work.

These and many other researches at Technology illustrate the general importance of the study of wave motion. Scientists and engineers may get wave-sick every

now and then, but waves are too important to be neglected for long. It is necessary now to utilize even the squeal of the pig.

By Way of Keeping up to Date

IF you do not expect the unexpected," said Heraclitus, "you will not find it; for it is hard to be sought out, and difficult." Here is a ready reference list, drawn from The Review's current file, of what scientists and engineers have lately announced as a result of their systematic expectation of the unexpected.

❑ In Technology's ceramics laboratory under the direction of Professor Frederick H. Norton, '18, has been developed a new type of porcelain, the surface of which bears beautiful crystals of varying size and color. These metallic crystals, which resemble the exquisite patterns of frost crystals on a windowpane, are produced by newly developed methods of precise temperature control.

❑ It was at the summer conference on spectroscopy and color held under the auspices of the Department of Physics at Technology that Professor Norton announced the new porcelain. Another development revealed at that time was a method of spectroscopic photography in which David Richardson, '35, research fellow in physics, found that by moving a photographic plate at a constant rate throughout exposure it was possible to record the presence of minute traces of elusive elements and even to determine in what compounds various metals are present. The usual analysis, for example, might detect sodium, iron, or some other element, but would not reveal whether the compound in which it was present was a chloride, a nitrate, an oxide, or some other form. Richardson's method makes this determination possible, for the width and brightness of a

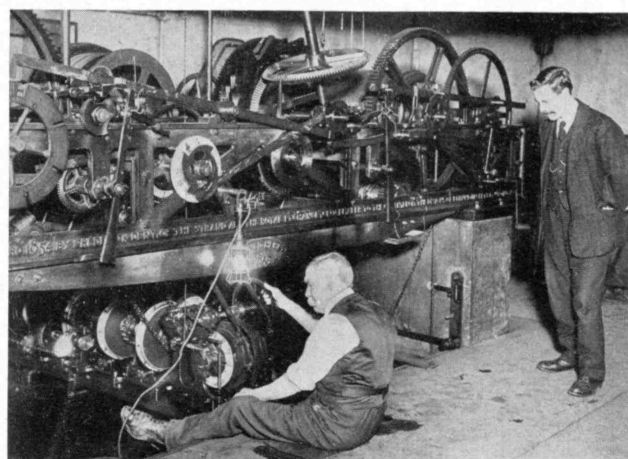
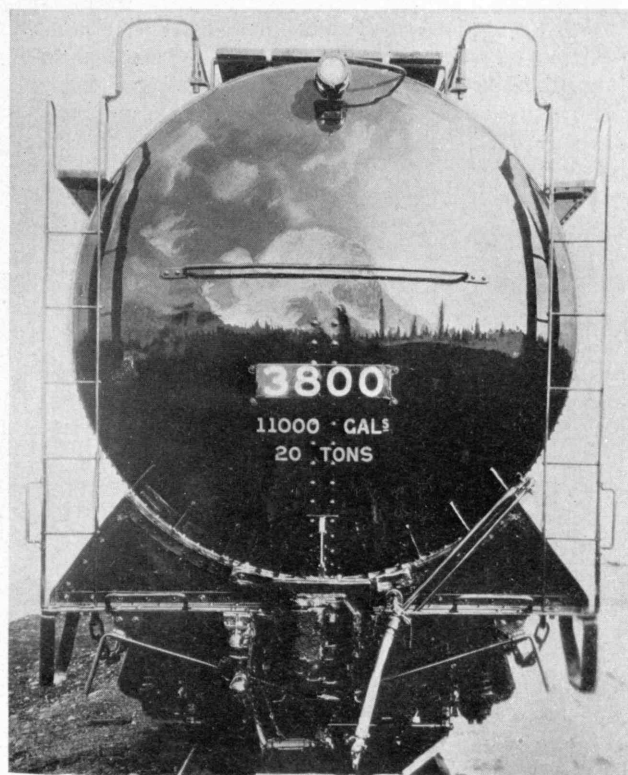
line that reveals the presence of a metal can also be made to show the negative radical, the element with which it is associated in the compound, under examination. The addition of the time dimension makes it possible to identify minute traces of an element that would escape detection in ordinary methods of analysis. The method also gives a more accurate determination of the amount of a substance present.

❑ It was at this same conference that Miss Mary Warga of the Mellon Institute announced that spectroscopy is being used for diagnosis of silicosis, the industrial disease caused by the inhalation of silicon. Amounts of silicon as low as two parts in a thousand can be detected by spectroscopic observation.

❑ Public figures who are subject to the attentions of the ubiquitous news photographer and his eye-blinking flash lamps may find comfort in the news that a non-dazzling photographic flash lamp has been developed. A blue dye coating is said to prevent the escape of the yellow light to which the eye is most sensitive, but permits the passage of photographically valuable light. If this method is successful, subjects can be photographed without their knowledge, a disturbing prospect.

❑ Fire hose treated with the radioactive salts of certain rare earth metals is reported to resist mildew permanently and to be moisture repellent as well as rot- and freezeproof. This method, developed by the research staff of the Manhattan Rubber Manufacturing division of Raybestos-Manhattan, Inc., greatly prolongs the life of the hose, it is claimed, and makes careful drying unnecessary. Furthermore, strength and flexibility are preserved indefinitely.

❑ Detection of carbon monoxide, the invisible and odorless lethal constituent of combustion gases, has long been a problem challenging solution. The gas is present



Fairbanks

Above. Clock-winding on the grand scale. A workman winding Big Ben in London. Left. Unusual reflection of the tank of Number 3800, one of Canadian Pacific's new giant freight locomotives. The image is not of mountains, clouds, and timberland, but of steam and smoke from yard engines

in the exhausts of internal combustion engines, and extremely small concentrations may be dangerous. Progress toward solution of the problem in-so-far as aircraft are concerned is indicated by an announcement from the United States Bureau of Standards that two of its research staff, S. H. J. Womack and J. B. Peterson, have perfected a light, portable device which gives an audible signal when carbon monoxide reaches a dangerous concentration in aircraft cabins. The device embodies a cell containing a granular mixture of manganese dioxide and copper oxide which changes carbon monoxide into carbon dioxide with generation of heat. The amount of the lethal gas is measured by the increase in heat.

¶ The convivial applications of ice and its value for the preservation of food quite overshadow many unique and unsuspected uses. Because ice expands in the process of freezing it has been used as a primitive method of splitting rocks, and engineers have used it to support heavy loads temporarily. Thus, as the ice melts, a heavy piece of machinery or structural member may be lowered into a desired position.

Solid carbon dioxide, better known perhaps by the trade name, Dry Ice, is useful for shrinking metal parts so that others may be slipped on for subsequent tight

fitting by expansion. By freezing the ground, engineers have been able to obtain a temporary firm foundation for structural purposes. One of the most recent applications of ice is covered by patents on a method of forming a solid bulkhead of ice in high-pressure gas mains to permit tapping for service lines or repairs. By means of by-passing, such work may be undertaken without interruption of service.

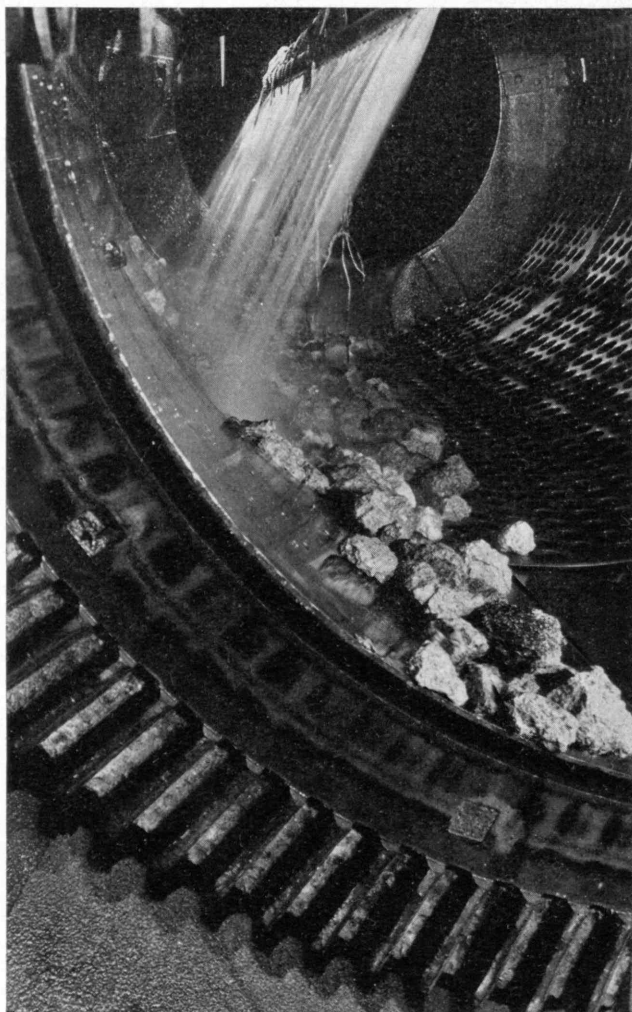
¶ The first steam turbine locomotive in this country is now under construction for the Union Pacific Railway, a leading exponent of comfort and convenience, as well as speed, among the awakening Rip Van Winkles of rail transportation. The new "power" is to have two 2,500-horse power steam turbine units operating through electrical transmission of power to the driving wheels. It is expected to be 20% lighter, horse power for horse power, than the conventional, but beloved old-fashioned steam locomotive, and even lighter than the oil-electric engines now in use on the Union Pacific lines. The patrician of power is expected to scuttle along the rails at 110 miles an hour with a train burden of 1,000 tons. General Electric Company is building it.

Thunder in the Making

BEFORE water droplets are released in the form of rain from the sky, they must satisfy rigorous demands of electrostatic behavior. The study of tiny water droplets and bubbles in strong electric fields provides a key to the understanding of the tremendous power of thunderstorms both in supporting great loads of water and in unleashing tremendous stored quantities of electrical energy.

Some preliminary secrets of this double-edged ability have been quietly uncovered by Dr. Tonks of the General Electric Company and Professor Zeleny of Yale, working quite independently. The relation of water-drop size to the electric field intensity is of considerable importance in connection with thunderstorm development and experiment, rounding out the program of photographing and recording lightning bolts. Experimentally one finds that in bubbles or drops of water may be stored great quantities of electric charge. At a certain critical voltage, the bubble will be set into violent oscillation and finally will burst. Just before this happens, however, the droplet becomes conical shaped and ejects little droplets, at which time there is a large electrical current flowing outward. Similarly, if a drop falls into an electric field, it is elongated to something like the shape of a needle, or if it is too large, it may look more ellipsoidal or egg shaped. Drops which are three to four times their equatorial diameter are either on the threshold of instability or are well along in the process of disruption. After the electric discharge has taken place, however, the drop may resume its normal shape in a sort of periodic cycle, while the electricity is continuously gathered together to form the eventual violent bolt of lightning.

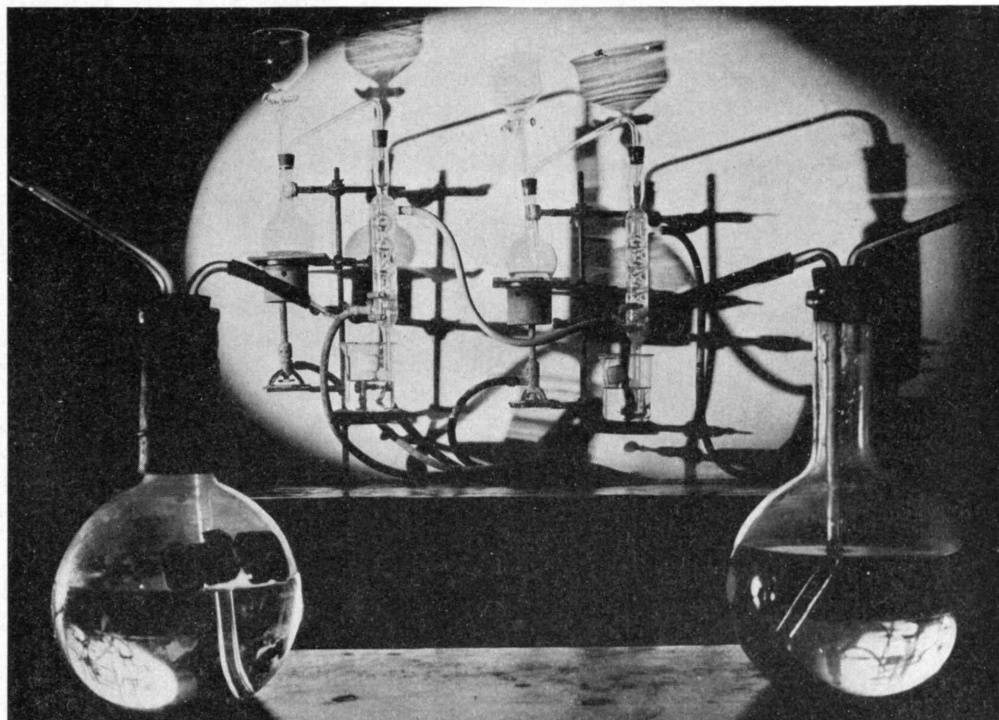
For many years meteorologists have known how small drops could coalesce to form larger drops which would be heavy enough finally to start falling by their weight. In the case of most thunderstorms, however, the electrical forces involved are far greater on the average than



Margaret Bourke-White

Washing bauxite ore before it is reduced in the making of aluminum

Beauty in the laboratory. At the Waterbury plant of the American Brass Company



Robert Yarnall Ritchie

the mere gravity effect of the little particles. Experiments by Professor Zeleny have shown that many, if not all, of the peculiar characteristics of thunderstorms may be due to the remarkable physical properties of water, which exhibits the largest surface tension and dielectric constant of all liquids and yet which is in reality the most common and simple of all chemical substances.

Synthetic Atmospheres

BY PAUL COHEN

THE vast cloud of greenish-yellow chlorine that swept across the Ypres salient on April 22, 1915, did more than introduce a new terror to warfare. It, and the more deadly gases that followed, sent thousands of soldiers to the hospitals, gasping for breath. To aid their damaged, laboring lungs, easy prey to pulmonary diseases, doctors made some of these casualties breathe atmospheres rich in oxygen, thus initiating one of the most important of recent advances in medicine — oxygen therapy. The use of the oxygen tent and related apparatus is, however, but one practical application — although at present the most important one — resulting from the study of the intriguing, almost unexplored field of artificial atmospheres.

Man can live for weeks without food, days without water, minutes without air. Yet because the normal atmosphere is so ubiquitous and so well adapted to our needs — or, rather, because we are so well adapted to the atmosphere — there was little necessity, aside from medical needs, for improving on nature until man left the surface of the earth and began to explore the upper reaches of the sky and the lower reaches of the sea. Then, too, the tremendous growth of air conditioning

has served to concentrate interest on the gases surrounding us and the effect of possible variations in composition.

Some unusual data and one important conclusion regarding synthetic atmospheres are contained in a paper recently presented to the American Society of Chemical Engineers by Dr. J. W. Hershey. All pure gases are invariably fatal to life, and that includes oxygen. Experimenting with white mice over a 12-year period, Dr. Hershey found that these animals will live in pure oxygen from two to six days. The limit for human beings has not yet been determined, but concentrations of over 60% at sea level are soon harmful to lung tissue. Mice can exist in hydrogen from two to 36 minutes; in nitrogen, six; in argon, three; in helium, two minutes, 40 seconds.

The rodents react normally or better than normally to an atmosphere consisting of 79% helium and 21% oxygen. Improvement can be noticed as the oxygen content is increased to 50%. When argon is substituted for the helium in the 79% to 21% mixture, the mice do not survive so well, but by increasing the oxygen content to 25%, normal life is obtained. From this work the doctor concludes that synthetic atmospheres may be created which challenge the superiority of the earth's atmosphere in supporting life.

Before the great number of practical applications for special atmospheres is discussed, a number of questions rise to one's mind. Why, for instance, the difference in the times which the pure gases take to kill? Why should the inert element in the mixture have any effect on the animals breathing it? Some inkling regarding the answer to the second question may be obtained from the fairly complete knowledge which physicians have about the action of oxygen and carbon dioxide on animals with lungs. (Their information regarding the rare gases is close to nil.)

Normal air contains, by volume, about 79% nitrogen, 21% oxygen, and 0.04% carbon dioxide. Less well known is the fact that the air in our lungs normally contains 5.6% carbon dioxide. If this percentage increases, the rate of breathing increases, and *vice versa*. By removing this gas from the lungs, or even by reducing it below a certain level, it is possible to make an animal die from lack of oxygen without its even making an effort to breathe. It is common practice to stimulate the breathing of persons who have ceased to breathe, or who breathe lightly, by administering carbon dioxide. Since it is a respiratory-center stimulant, it has been suggested that, paradoxical as it may sound, carbon dioxide should be breathed when mountain climbing or flying at high altitudes. Tests on mountain climbers show that only two to five per cent of carbon dioxide by volume need be inhaled and that such inhalation permits a smaller rise in blood pressure and less strain on heart and lungs than the breathing of normal air. Mountain and air sickness is also benefited by such treatment.

It is important to notice in this connection that recent tests show helium to have a decided effect on the respiration centers, although the effect is not ordinarily noticeable because helium forms only one part in 200,000 of normal air.

But helium has two other properties that make it a valuable constituent of synthetic atmospheres, particularly under high pressures, as in deep-sea diving and in caisson work and in certain pathological applications. Helium has a coefficient of solubility that is only one half that of nitrogen. Bends, that extremely painful and dangerous disease that sometimes afflicts divers and caisson workers, is caused by gases, absorbed by the blood under pressure, forming in bubbles in the arteries as the pressure is too suddenly released and supersaturation is produced. The use of helium may lessen this danger and in 1923 a patent was issued in the United States based on the use by workers under pressure of an atmosphere consisting of helium and oxygen.

Helium is also a very light gas, having only one seventh the density of nitrogen. A mixture of 80% helium and 20% oxygen has, therefore, only one third the weight of a comparable volume of air. It was felt that an atmosphere with such a property would be of value in treating cases of asthma and obstructive growths in the breathing passages, as its lightness would decrease the effort of breathing. Tests have shown the soundness of this idea and have indicated that the best proportion is 65% to 70% helium, the remainder, oxygen. Hydrogen cannot be used because of the danger of explosions.

From the list of illnesses now treated with the oxygen tent — almost every one involving difficult breathing or oxygen want — there may be gathered an impression of the potential use of synthetic atmospheres in medicine. Diseases of the lungs, heart, and circulation system are thus treated. Certain mental diseases are benefited by oxygen therapy. Some dementia praecox patients may have lucid intervals for as long as 20 minutes when treated with special oxygen-nitrogen-carbon-dioxide mixtures, suggesting that dementia praecox is tied up with a condition resulting from a deficiency of blood in the brain.

The oxygen tent is of value in many cases of poisoning, particularly when morphine, strychnine, carbon monoxide, and anesthetics are involved. Another application is in cases of acute alcoholic coma. The oxygen tent and other treatment generally allow the patient to leave the hospital after a few hours in — using the physicians' phrase — “a fairly sober condition.” The healing of wounds, obstetrics, and post-operative conditions are other fields for this technique. In the usual oxygen tent, the oxygen is kept at from 40% to 60% while the carbon dioxide is not allowed to rise over 4.5%.

When it is considered that mines are growing deeper, deep-sea work more frequent, and that regular passenger flights in the stratosphere are a probability of the not-too-distant future, the importance of, and the necessity of understanding the action of, artificial atmospheres grows more apparent.

The Power Conference in Retrospect

CERTAIN debonairly written and superficially informed press reports of the Third World Power Conference have created the impression that the great September meeting in Washington was fraught with propaganda, torn by dissension, and indifferently attended even by the official delegates themselves. Investigation among delegates convinces us that these reports were, in the main, exaggerated, and that the Conference was, in fact, one of the most successful discussions ever held of public utility policy and of the engineering, economic, and managerial aspects of power. The question of private versus public ownership was brought into the clear daylight of honest speech, and both representatives of the government and of the utilities endeavored, and with success, to keep the discussion on a high plane. Their motto, it might be said, was “do as adversaries do in law, Strive mightily, but eat and drink as friends.”

One part of the Conference that did not receive adequate recognition, except from enthusiastic participants, was the series of technical study tours which were organized under the direction of Maurice Holland, '16, who has been so adept in handling the industrial tours of the National Research Council. These tours made it unnecessary to set up physical exhibits before the national Conference, and they made it possible for small groups of technical authorities in all the fields basic to the Conference to see industrial America at work, to observe the advances in technology under actual operating conditions, and to observe the advances in American practice in company with their American colleagues interested in the same fields. The round-table conferences that took place as the trips progressed were well handled and highly profitable to those who participated.

Taken together, these tours were a novel and valuable contribution to the technique of handling international engineering conferences, and were, we hasten to add, a pleasure to those institutions and companies who had the opportunity to entertain them, as our experience at Technology with one group amply demonstrated.

New Objectives for Technology

The Program, Requiring \$12,500,000, for Student Welfare and Educational Expansion Approved by the Corporation Last Month

BY KARL T. COMPTON

EDITORIAL NOTE. The Review presents below an abridgment of President Compton's stirring report to the Corporation outlining the needs and opportunities with which the Institute finds itself confronted. In later issues we will present detailed plans for the various projects, but enough is included below to confirm President Compton's remark that "some of these opportunities show such promise that their neglect would be no less than educational *sabotage*."

PERHAPS the most striking feature of the Institute's record during the depression has been the fact that it has made no call on Alumni for financial support, nor has it undertaken any fund-raising campaign. Its attitude has been that during this time when its Alumni and friends were having their own difficulties, it should make every possible effort to handle its own situation through careful administration and even if necessary through personal sacrifices by members of its organization. To do this, it has had to forego, for some five or six years, the active prosecution of many important projects which have long been contemplated or which have arisen during this period.

In my judgment, the future vigorous and healthy growth of the Institute depends upon the finding of some means whereby these intellectual babies, among which are undoubtedly embryonic developments of large importance in the future, may be nourished and developed to healthy maturity. The Institute is in somewhat the position of an athlete who has undergone a severe course of training and is now at the peak of condition to perform. I wish to outline those directions in which, in my judgment, the growth and effectiveness of the Institute can most advantageously be extended.

Plunging boldly and immediately to the heart of the matter, I present my considered estimate that a capital sum of \$12,500,000 or its equivalent in annual income is the financial measure of those needs and opportunities which are so urgent that delay in fulfilling them will cause real retrogression in the educational program.

In contrast with ordinary universities, M.I.T.'s educational program involves intensive laboratory work in nearly every course. Its type of education is therefore inherently more expensive than education of the ordinary collegiate grade. Furthermore, its established position of leadership in the field of scientific and technological education carries a definite responsibility for maintaining this position. This can be done only by maintaining a staff of such high quality, laboratories of such adequate equipment, and an active program of creative work of such value and distinction as to make this institution the place above all others to which a gifted student will wish to come for a type of training and inspiration which is unexcelled.

Increasing emphasis on postgraduate work is one of the reasons for need of new facilities. Practically speaking, graduate work in engineering was almost negligible in the period before the erection of our present educational plant. Graduate work in science did exist but only to a small fraction of its present importance. The plant, conceived as it was with great generosity and remarkable vision and in spite of additions, has nevertheless become inadequate to the demands now made upon it by increased enrollment, graduate work, and research. This increase in postgraduate education and research is the Institute's answer and is industry's demand to meet the problem of ever increasing technical specialization. Not only are students with postgraduate training more readily employable than those without it, but in some branches of engineering and nearly all branches of science it is now very difficult even to get a start in a career without such training. The Institute's leadership in the field of technological education therefore depends, in a very important manner, upon its leadership in postgraduate training and research.

There is still another general argument for the program which I propose. This rests upon the opportunity which this institution has, to perform an exceedingly important type of public service after a manner which no institution has ever yet approached. My belief in the possibility of an enhanced value of the Institute to the public is based on careful study of its potentialities of staff, equipment, and organization. The educational program requires a staff which includes experts in almost every aspect of science and engineering. Thus there is available for attack on any problem a closely knit, coöperating group with wider range of technical experience and approach than can be found probably in any other organization in the world. Because of the teaching program, therefore, this framework of a research organization is already provided. I can imagine no investment for public welfare so likely to secure large returns as one which would permit the latent creative powers of this institution to become really active.

Let me turn now to some of the specific details of this program. It is comprised of two parts: the one having primarily to do with educational activities, and the other having to do primarily with student welfare. It would be a mistake, I think, to seek to further either one to the exclusion of the other. They are both necessary to the Institute's effective operation.

STUDENT WELFARE

Dormitories. Well aware of the proper reluctance of the Corporation to put money into buildings unless need of them is really acute, I nevertheless believe that the

present dormitory situation can almost be said to have reached that stage. At any rate I am convinced that an addition to the Institute's dormitory accommodations would be an asset in the educational process, a relief to the students, and would be economically justified. These are the facts: Our three dormitory groups, with total capacity of 625, were filled just before the depression. During the early part of the depression occupancy decreased, until in 1932-1933 there were as many as 74 vacancies. This was an economic loss and detrimental to morale. At this point the older dormitory group was converted into a Graduate House, well furnished with attractive appointments which would promote social intercourse between graduate students specializing in the various fields.

This plan was immediately successful and even at the point of lowest registration in 1934-1935 the dormitories were again filled. The next year there was a waiting list of rather distressing proportions. This year every available room in the Graduate House has been engaged since last April and there was a disappointed waiting list of 123 on the opening day of this fall term. Every one of these men could have been advantageously settled in a dormitory, if space had been available. When the Institute opened, there was a waiting list of over 200 for the undergraduate dormitories, every such dormitory room having been leased since before July 1. This undergraduate group will be somewhat reduced by transfer to fraternity houses and by withdrawals from the Institute, but a conservative estimate based on past experience indicates that out of these 200 undergraduates, approximately 100 could be housed if accommodations were available. Taking these two groups together, it is evident that there is a present unsatisfied real demand of at least 200 students for dormitory rooms. We may reasonably expect this number to grow rather than diminish in the next few years, even though the plan of stabilization of enrollment is continued.

There is undoubted advantage in having a waiting list. This enhances the value of the dormitories in the eyes of the student body and strengthens the hands of those students and administrative officers who have responsibility for administering discipline in the dormitories. Nevertheless I feel that we should be safe in providing dormitory accommodations for at least 100 more students.

To provide this dormitory accommodation would require an expenditure of about \$500,000. At the present low rate of interest on invested funds I believe that the Corporation might well consider the advisability of putting \$500,000 into a new dormitory, with the reasonable expectation of a net return from rental equal to the equivalent investment income.

Recreational and Extracurricular Activities. The desirability of an extension to the Walker Memorial and of a new gymnasium is so well recognized by every one in touch with student life that no defense of these items is needed.

My recommendations would be that we count on something of the order of \$1,000,000 as required to provide one or the other of these two facilities for student welfare and that a careful study be made to determine which of the two is more urgent. I do not believe

that we would be justified at this time in attempting to provide *both* the extension to Walker Memorial and a new gymnasium in view of the additional demands for funds which will be described in the following outline of the needs of our educational program.

EDUCATIONAL PROGRAM

Above any other need of our educational program I would place the need of fluid funds for research, not permanently assigned to any particular field of architecture, science, or engineering, but free for use as opportunity offers to aid the development of ideas and programs of unusual promise as they arise. The six-year period of grant, totalling \$170,000, from the Rockefeller Foundation gave an illustration of the great value of a fund of this type. Three hundred and eight scientific publications have already come out of the research made possible by this grant, and probably 200 more are still to come. It is in no inconsiderable degree that this fund is responsible for the enhanced prestige and valuable output of research from our scientific departments during the last few years. I shall postpone consideration of this item until the other items have been presented.

Fellowships. We need \$60,000 a year for additional fellowships of special types. I should not wish to base this need on the competition between institutions for students and particularly graduate students of the very highest ability, although this is one factor in the situation. Ideally we should draw these students, not by fellowships, but by offering an educational opportunity so fine that the students will come to take advantage of it, if they can, and the Technology Loan Fund will help them. It is a practical fact, however, that a fellowship program, wisely administered, can be a most significant educational asset. Some of our sister institutions have instituted exceptional fellowship programs with excellent results. For example, we recall the new fellowship program instituted at Harvard University and, earlier, the fine group of fellowships at Princeton University which was in no small part responsible for Dean West's success in building there a graduate school of first rank.

Fellowships, however, should not be looked upon as a means of purchasing or subsidizing students or of building up the scholastic team by methods which, so it is said, are sometimes employed for the recruiting of athletes. Rather should fellowships be considered primarily as prizes and incentives, or as providing opportunity for study and investigation of problems of exceptional interest. The winner of a fellowship is encouraged and assisted along his professional career. The fellowship system creates in the minds of students and the public generally a high appreciation of scholarship. The Institute is fortunate in having some half-dozen fellowships which carry more than a portion of the tuition charge and which are of the distinguished character desired, but this number should be largely increased.

To raise our fellowship and scholarship program to an adequate level would require annually at least \$60,000 or the income from a capital investment of \$1,500,000.*

* The details of the proposed fellowship and scholarship program will appear in a later issue of *The Review*.

Wind Tunnel. Airplane speeds have increased so rapidly that the Institute's wind tunnel, built in 1923, is already obsolete except for instructional and a limited number of experimental purposes. The wind velocity and size of models which can be employed in this tunnel fall below the useful range for studying and designing present-day airplanes, and the degree of obsolescence will rapidly increase. The Institute had the first course in Aeronautical Engineering in America and the first wind tunnel; it has a notable record of achievement and an able staff in this field. Lack of this modern facility should not be allowed to relegate the department to an inferior and less effective position. Eastern airplane and propeller manufacturers are eager to have a satisfactory wind tunnel on the East Coast and have promised to assist in supporting the operation of such a wind tunnel by contract for experimental work with suitable provision for overhead charges.

A unique design of wind tunnel is planned, which will gain the advantages of a very large tunnel with enormous wind velocity through the expedient of operating at an adjustable air pressure within the tunnel. By this means the cost of a satisfactory tunnel can be brought down to \$125,000. Aided by the vigorous study and report of last year's Visiting Committee for the Department of Aeronautical Engineering, pledges have been received for a substantial portion of the cost of this wind tunnel and it is much to be hoped that the balance of the fund may be secured during the current year.

Towing Tank. In a somewhat analogous category with the wind tunnel is the need of a model towing tank for the Department of Naval Architecture and Marine Engineering. This has long been a subject of intense interest to the Institute, dating back at least to the time when the late President Stratton and John R. Freeman, '76, made intensive studies and preparations for the installation of a combined hydraulic laboratory and towing tank. Unfortunately, circumstances have thus far prevented the consummation of their well-laid plans.

Much of the most valuable recent work on hull design of ships and in the scientific study of the phenomena of ships afloat has been done with the aid of towing tanks which are much smaller and less expensive than the tank which was recently projected for the Institute. Encouraged by this fact, and convinced that a department of naval architecture and marine engineering so prominent as the Institute's should not be handicapped by lack of this essential piece of equipment for teaching and research, favorable consideration has recently been given to the advantages which would be offered by a small tank costing perhaps \$35,000.

High-Voltage Laboratory. Significant opportunities would be opened up in our teaching and research program by the provision of suitable facilities for experimental and developmental work in the field of high-voltage electricity. In this, both the Electrical Engineering and Physics Departments are intensely interested. There are definite industrial trends toward the use of ever higher voltage; there are many important practical problems to be solved and a great virgin field for scientific and industrial pioneering. The physicist is especially interested in the use of high voltage to explore the inner nuclei of atoms — those tiny citadels which

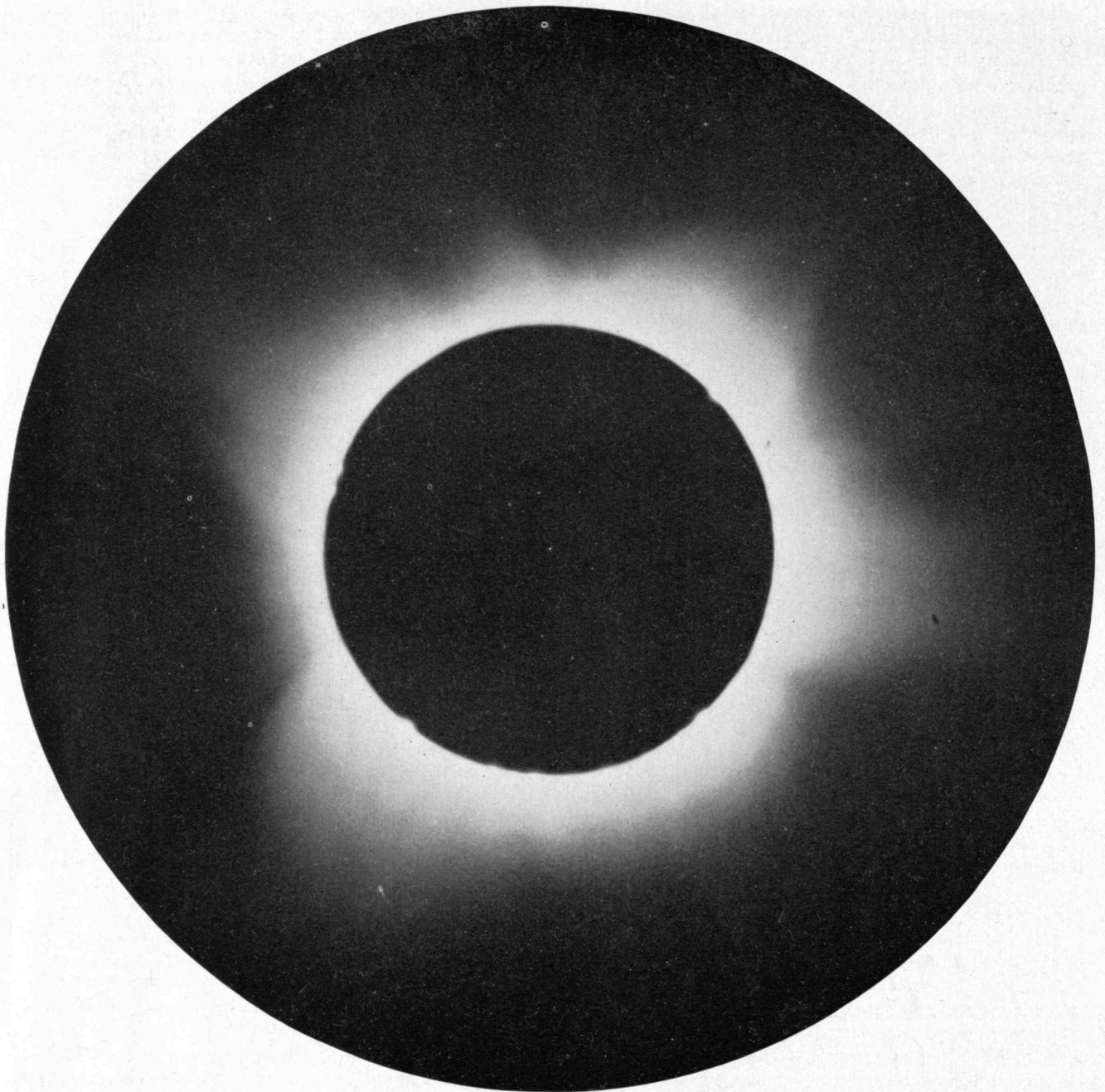
for centuries withstood the efforts of the alchemists. This new field may well prove to be as far reaching in its scientific and practical influence as were those fields which were opened up by the discovery of the electron a generation ago. The Institute is now in the unique position of having on its staff probably the most competent men in the world in fundamental aspects of the high-voltage field, and it is also in the position of having developed the equipment for producing direct current of ten times higher voltage than any which has hitherto been achieved. All of this opens up a very large field for research and for thesis work by graduate students, provided the necessary facilities can be secured.

While the estimates are not yet complete, it appears that a reasonably active prosecution of this program will require the construction of some \$340,000 worth of buildings and equipment and an annual operating budget of \$50,000, or the income from \$1,250,000. This figure, while large, is exceedingly small in relation to the value of some of the industrial possibilities in the high-voltage program.

Biological Engineering. We suggest the name of biological engineering because, whenever the practical applications of a science develop to the point at which there is a systematic method for applying the science to practical problems, we call this a branch of engineering. Within the memory of our staff, a certain technique of applying chemistry and engineering to industrial problems led to the creation at the Institute of a new art, chemical engineering, which has become one of the most active and important branches of applied science. I would suggest that the same success and development may well follow a strong attempt to center here a practical approach to biological and medical problems, involving the coöperative effort of biologists, physicists, chemists, and engineers, and coördinating the background of interest in these fields which we now find, partly for historical reasons and partly from natural development, throughout the Institute.

The need is for a laboratory costing, with equipment, about \$750,000, together with some \$80,000, or the income from \$2,000,000, for annual support of operations. One purpose of this income is to provide additional members of the staff who are leaders in various aspects of biophysics, biochemistry, and food technology, and a small group of expert chemists, physicists, and engineers selected to work in this field. The laboratory might well be named the "Sedgwick Memorial Laboratory," and a start has been made by admirers and former colleagues of Professor Sedgwick to raise funds for some memorial to him.

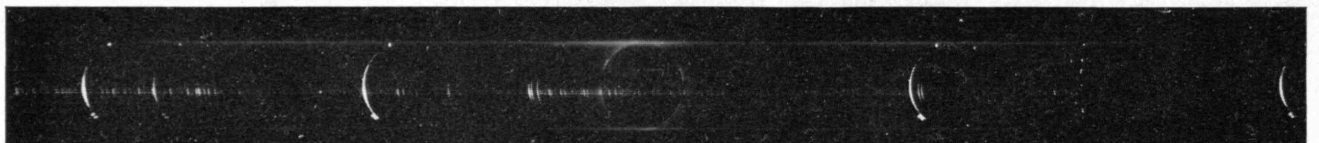
The rather desperate crowding of the existing educational buildings is an additional argument for the proposed new building. Since the early 1920's, the number of undergraduate students in biology has increased fourfold and the number of graduate students tenfold, with almost no opportunity for expansion of quarters. The Department of Biology and Public Health has probably become the most congested and inadequately housed department in the institution. If, however, it could be moved to new quarters, the Electrical Engineering Department, which is one of the other two most crowded departments, could (Continued on page 46)

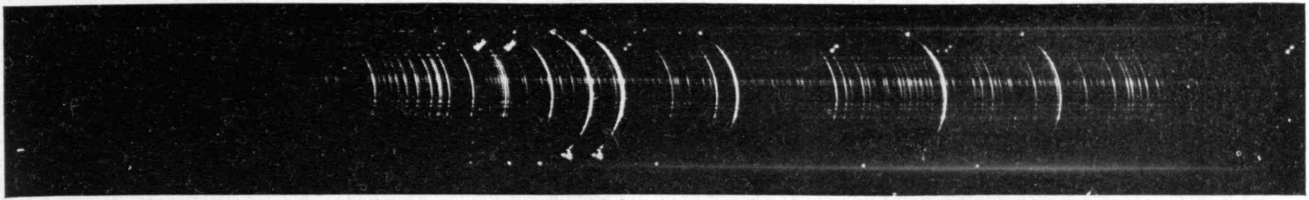


SEVEN THOUSAND MILES FOR THESE . . .

and other similar photographs journeyed 22 people and seven tons of astronomical instruments. And with good reason, for solar eclipses provide, through such records as these, data that scientists cannot obtain in their puny terrestrial laboratories. The spectrogram reproduced below is but one of some 3,500 cryptic records that the Harvard-M.I.T. Eclipse Expedition obtained in Russia last June and that, when analyzed, may solve some of the mysteries of the sun's corona.

A coronal telescope caught the picture shown above of the corona at totality. The brightness of this corona was 50 to 100 times greater than that of the full moon, whereas in previous eclipses the highest recorded intensity was about equal to that of the full moon.





"FINGERPRINTS OF THE ELEMENTS"

The crescents in these spectrograms are spectral lines coming from the edge of the sun, and the two big crescents in the series above represent calcium. This spectrogram was taken at the beginning of totality; the one on the opposite page, as the moon was moving off. In the latter the circle represents green light emitted from the coronal ring

Eclipse in Ak Bulak

The Harvard-M.I.T. Expedition to Russia Reports on Its Experiences and Results

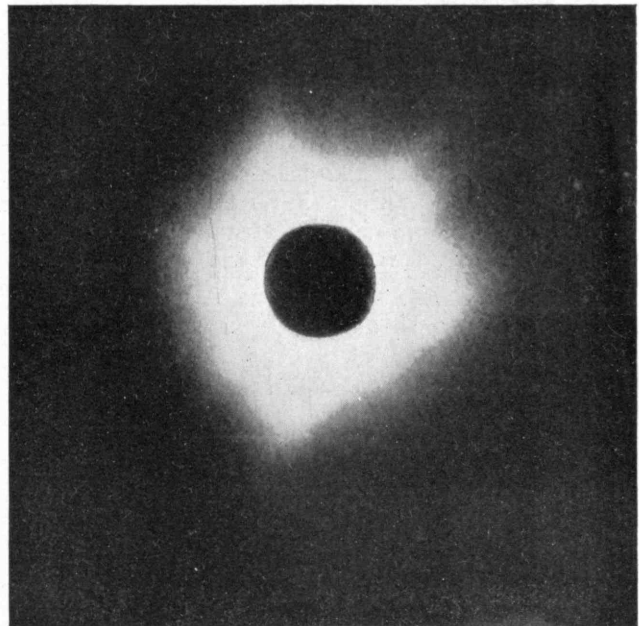
BY DONALD H. MENZEL AND JOSEPH C. BOYCE ✓

THIS is an account, the first comprehensive official one, of the expedition that last spring carried 13 men (note the number), 9 women, and seven tons of instruments to the astonished village of Ak Bulak in Soviet Central Asia to observe for 117 seconds, weather permitting, the total eclipse of the sun on June 19. A year or so of study must precede any formal scientific publication of results, but it is possible now to suggest the extent to which we were successful in obtaining data, to describe our experiences in the U.S.S.R., and to detail a notable example of generous assistance to science by friends in this country and Russia.

M.I.T. cooperated with the Harvard Observatory in the expedition and our mutual objectives were the study of the spectra of the chromosphere and corona with as good spectrographs as we could beg, borrow, or build and an investigation, by our communication engineering colleagues, of the effect of the eclipse on radio transmission. The unexpected gift and loan of a coronal telescope and an illumination meter gave opportunity for additional observations not originally planned.

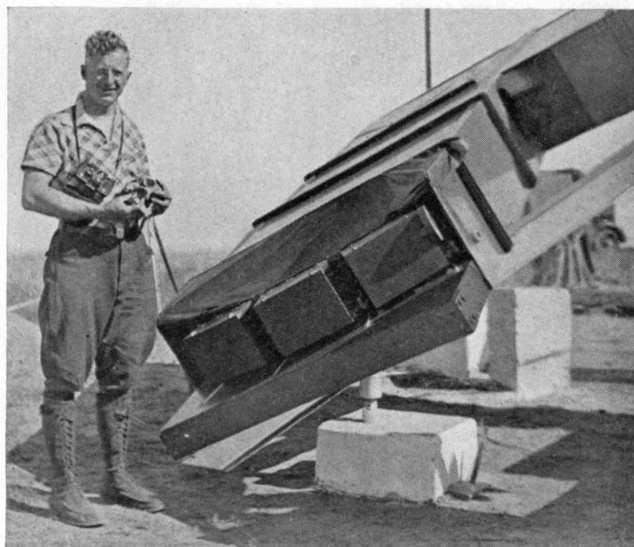
The design of the spectrographs presented a number of interesting engineering problems. Rigidity had to be obtained without loss of portability and some of the instruments had to be mounted on a polar axis so as to follow the motion of the sun across the sky. Where previous eclipse expeditions had relied mainly on wooden construction, it seemed to us that light metal alloys would meet the requirements even better. The Dow Chemical Company of Midland, Mich., was asked to help us and responded most generously by offering to fabricate the spectrograph frames and mountings out of Dowmetal, their light-weight alloy composed approximately of 96% magnesium and four per cent aluminum. We had borrowed, from our own institutions and elsewhere, a total of six diffraction gratings, and one set of prisms, which made possible the construction of seven spectrographs. A frame sufficiently rigid for one spectrograph is sure to be strong enough to bear the weight of several. Taking advantage of this fact, we designed a

multiple eclipse spectrograph, in which the component parts of four separate grating spectrographs were carried within one box. The box was pivoted in a sort of fork or cradle to permit adjustment to the sun's declination and the cradle, in turn, was mounted on a polar axis. The axis was fitted with a clock drive for following the sun's motion. Because of its fourfold capacity, we dubbed this multiple spectrograph the "quadruped." The prisms which, with lens and camera, formed another



A SIGN IN THE SKY

... the Russians called it, for the corona in this eclipse fortuitously assumed the form of a five-pointed star, the Soviet national emblem. This photograph, taken with a Zeiss Contax camera with telephoto lens, clearly shows the star pattern. It is unfortunate that the reproduction gives no idea of the delicate coloring, the lavender shades of the prominences, the frosty pattern of the coronal streamers as they rose two million miles above the surface of the sun and shaded off into the blue-black sky



WHILE ON LOCATION

... thus posed the leaders of the expedition, who are also the authors of the accompanying text: Left, Dr. Donald H. Menzel of Harvard University, who was in charge of the expedition. Right, Dr. Joseph C. Boyce of M.I.T., who assisted him. Dr. Menzel, who stands beside the six-camera "snowplow" spectrograph, holds in his hands a skull unearthed on the lot and that, in lieu of any identification, was affectionately dubbed Yorick, alas

spectrograph, were mounted in a Dowmetal case on top of the quadruped. For the two gratings remaining, a double spectrograph was designed in which compactness was sacrificed to wide spectral range. This double spectrograph, whose V shaped appearance gave it the name of the "snowplow," instead of being pivoted on a polar axis was set on stationary piers and received sunlight reflected from the moving mirror of a coelostat.

These spectrographs, after being constructed in Midland, were shipped to Cambridge where a room large enough to receive them was found in one of the mechanical engineering laboratories at Technology. Meanwhile lens and grating holders, some of the cameras, and other auxiliary equipment had been built in the M.I.T. physics shop under the able direction of Mr. Walter Kallenbach, chief mechanic. After preliminary adjustment, the instruments were taken apart and, with

additional equipment and supplies, packed for the long journey. Our eighth spectrograph, kindly lent to us by Bausch and Lomb, was shipped by them directly to the boat. This large laboratory instrument, with quartz prism, was fitted with a lithium-fluoride lens that formed an image of the sun on the slit of the spectrograph. This lens was ground from a large single crystal grown in the George Eastman Research Laboratory by Professor D. C. Stockbarger, '19. Owing to the peculiar physical properties of lithium fluoride, simple lenses made of this substance are very nearly achromatic.

The radio equipment employed to record the effect of the eclipse on the ionosphere was designed and built in the Cruft Laboratory at Harvard, under the direction of Professor H. R. Mimno. The height of the region that reflects radio waves depends on the frequency and also changes from night to day. Equipment was used for measuring the time interval elapsing between the sending of a pulse upward and the returning of the echo. Since the speed of the signal is known, the effective heights of the reflective layers can be calculated. These measures were carried out at two fixed frequencies by one set of apparatus while another set operated at frequencies varied continuously over a wide range.

In Russia, the members of the expedition were guests of the Academy of Sciences of the U.S.S.R. Freight rates were cut and the Academy arranged for Intourist to provide us as far as possible with first-class rail and hotel accommodations at the regular third-class price. Dr. B. P. Gerasimovič, director of the Poulkova Observatory in Leningrad, who made arrangements for all the foreign expeditions (totaling 70 scientists) in the country, did everything in his power to facilitate our work. We were particularly fortunate that our choice of an observing site at Ak Bulak, Kazakstan, in Soviet Central Asia coincided with that of his own Poulkova expedition. In making this selection, we were influenced by the favorable weather record even though the sun was

Those Who Went

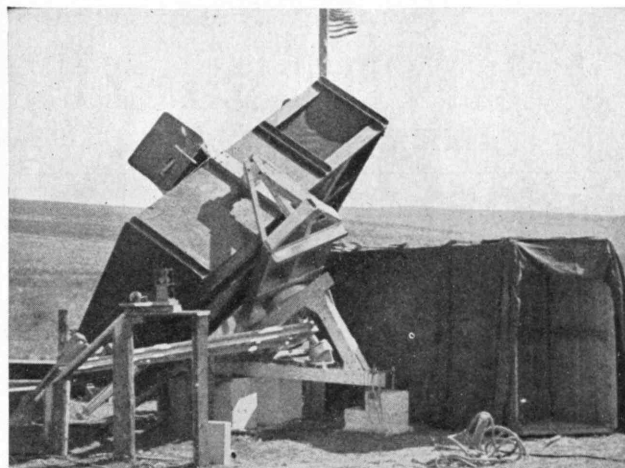
The personnel of the expedition included: Dr. D. H. Menzel of the Harvard Observatory, leader, and Mrs. Menzel; Dr. J. C. Boyce of the Physics Department at M.I.T.; Miss Henrietta H. Swope, Mrs. Emily Hughes Boyce, and Henry Hemmendinger of the Harvard Observatory; Paul King, J. A. Pierce, Harner Selvidge, VI-A, '32, and E. P. York of the Cruft Laboratory, Harvard; Jackson H. Cook, VI-C, '36; Dr. W. R. Brode of Ohio State University and Mrs. Brode; Dr. R. d'E. Atkinson of Rutgers University and Mrs. Atkinson; A. E. Benfield, VIII, '34, now a research student in geophysics at Cambridge, England, and Mrs. Benfield; Dr. I. C. Gardner of the National Bureau of Standards and Mrs. Gardner; Dr. Clyde Fisher, director of the Hayden Planetarium of the American Museum of Natural History, New York City; Miss Catherine Stillman of the Vassar College faculty; and Miss M. O'L. Crowe of Albany, N. Y.

not so high in the sky as at certain stations farther east. Ak Bulak, which appears on but few maps, is a small town located on the Orenburg-Tashkent railway line between Iletsk and Aktyubinsk.

The advance guard of the party left Moscow one evening early in May in the combination sleeping and dining car that was to be our home for the next seven weeks. The car was attached to the Tashkent express with two of our freight cars hooked on behind. The third freight car followed one day later. Very early on the third morning after leaving Moscow, our cars were deposited on a siding at our destination where we found the President of the local soviet waiting to greet us. His friendly act was typical of the treatment we received at the hands of all of the officials we met. As occasion arose this friendliness was matched by practical assistance, whenever we needed it. At times this help was rendered in a manner that was rather unexpected and puzzling to us, unaccustomed to Soviet methods and oriental psychology — but the assistance was nonetheless effective.

The population of Ak Bulak is 9,000, divided about equally between European Russians, who have come in since the railroad was built early in the century, and the native Kazaks, who are obviously of Mongolian origin. The people live in whitewashed adobe houses built along wide, and for the most part dusty streets. Separate schools are maintained for the two races, in line with the Soviet policy of encouraging minority groups to keep their own languages. The railroad station and yards now dominate the town, but various incidents kept reminding us that the railroad had only recently replaced the caravan.

The local farms use modern tractors, but the fuel for these machines is hauled from the station in camel-powered wagons. The surrounding country is semiarid and treeless, although trees are now being cultivated in the district. A special siding was built near the station for our car. Ordinarily the siding was disconnected from the main-line tracks, but when a car was to be moved a gang of men merely pulled up the main rails and bent



THE QUADRUPED

... or four-in-one multiple eclipse spectrograph, probably the largest eclipse spectrograph ever built

them around to join those of the siding. Then, after the car had been shifted, rails were restored to their original places. In addition to the car we had brought with us from Moscow, a baggage car served as a laboratory for the radio receiving equipment. Later on, as more people arrived, a second sleeping car was added. One room of the local bath house, which was put at our disposal every third afternoon, contained a real enameled bathtub sent from Moscow for our special benefit. The tub was installed in a somewhat unusual manner that in no way impaired its use. Large pipes supplied ample hot and cold water to faucets on the wall a foot or so above the tub. Imagine our surprise when, on withdrawing the large wooden plug from the drain, we found the contents of the tub pouring out on our feet, all over the cement floor, and finally running off through a hole in the corner.

The work of setting up the astronomical instruments proceeded smoothly. We were located on a hilltop nine miles from town and went back and forth in a Russian-built Ford. Since certain adjust- (Continued on page 36)



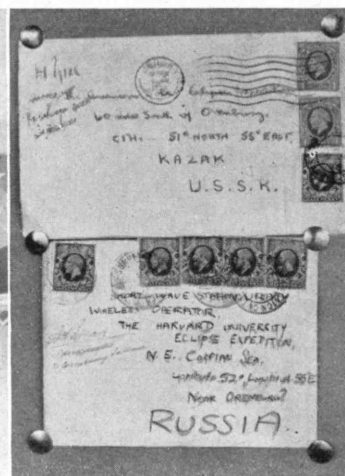
NOT NECESSARY

... because the Russian food was excellent, but it made a good picture. The bread saver is Henry Hemmendinger of the Harvard Observatory



ALOFT

... is Miss Henrietta Swope and exchanging pleasantries with her, the Russian host, Dr. B. P. Gerasimovič



FAN MAIL

... prompted by radio conversations reached the expedition with such varied addresses as shown



On this and the next page is presented visual evidence that the Technology community has taken to the water and has ample facilities for indulging its enthusiasm for sailing. This fall 75 members of the staff and nearly 400 students are using the new sailing pavilion on the Charles and the 36 dinghies

¶ The Dining Service, despite the fact that it failed to meet its expenses by \$500, attracted 60,000 more patrons than the year previous, and with the able advice and assistance of William E. Smith, a veteran of the hotel and restaurant world, it has gone a long way toward rehabilitation during the year. It is off to an excellent start this year.

Registration

GROSS total registration, as of the third day of 1936-1937, discloses 2,781 undergraduates and graduate students, which is 237 or eight per cent above last year. Except for seniors, all undergraduate years show substantial gains—the figures for freshmen, sophomores, juniors, and seniors, being 655, 555, 510, and 459, respectively. Graduate students have multiplied from 517 to 602, a gain of over 16%.

The Department of Chemical Engineering (including Courses X, X-A, and X-B) again has the most students, with 451—up 39; Electrical Engineering (VI, VI-A, VI-B, and VI-C) is again second with 441—up 56. Three other departments continue to have more than 200: Mechanical Engineering (II and II-A) with 311—up 35; Business and Engineering Administration (XV) with 278—down four; and Aeronautical Engineering (XVI) with 222—up 20.

The gross first-year registration figure of 655 includes returning and special students, the number of “entering freshmen” being 636, which exceeds the upper limit of

the stabilization range of 575 to 600 established for 1936-1937 by the Faculty. Cancellations and withdrawals during the opening weeks of the term are expected to reduce the 636 third-day-of-the-term total by the time of the official registration count on November 1.

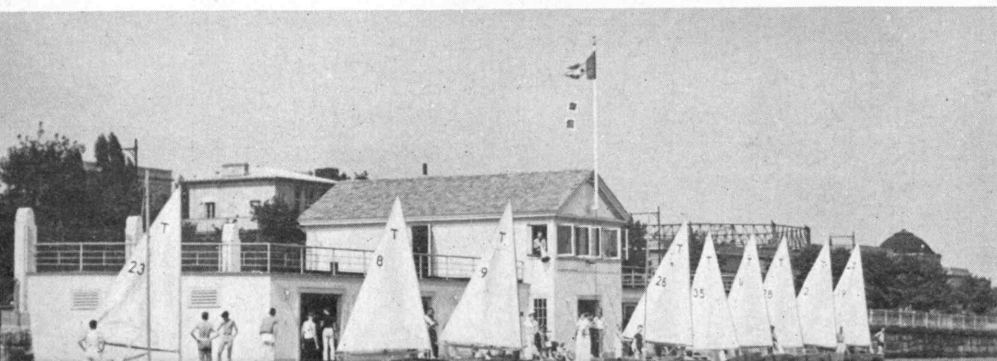
It should be noted that in this initial year of admitting freshmen under the plan for the stabilization of enrollment, each of the 636 (with but one or two exceptions) has come in clear of entrance conditions. If it had not been for selective admission under the stabilization plan, first-year registration this year would undoubtedly have topped 700, a figure far in excess of the capacities of laboratories, lecture rooms, and teaching personnel.

Uniting the Arts and Sciences

A PLAN under which eight colleges are cooperating with the Institute to facilitate the combination of a liberal arts course with education in science and engineering became effective this autumn.

For those students who wish to attend a liberal arts college before beginning their professional training, the plan presents the advantages of a three-year course in the liberal arts to be followed by two years, and in some instances a summer session, at the Institute. Completion of this unique five-year program leads to the bachelor's degree from both institutions.

The new arrangement is designed to overcome some of the obstacles of time and expense involved in the conventional plan of completing a four-year liberal arts course before entering upon the professional program. It not only saves a year, but offers students the benefits of a carefully coordinated program in which the interdependence of the arts and sciences is given full consideration.



The colleges that have joined the Institute in this program are Miami University, Middlebury College, Ohio Wesleyan University, Reed College, Ripon College, St. Lawrence University, Williams College, and the College of Wooster.

Appointments

AMONG recent appointments to the staff, of special interest is that of Rupert Maclaurin, older son of the late President Richard C. Maclaurin, who has been appointed assistant professor in the Department of Economics and Social Science. He is a graduate of Harvard University in 1929, and later entered the Harvard Business School which awarded him the degree of master of business administration in 1932. He will devote special attention to the economics of housing.

Dr. Artur von Hippel, the brilliant young German scientist, has been appointed assistant professor in the Department of Electrical Engineering. Dr. von Hippel has already distinguished himself by outstanding research in the field of applied physics, particularly in the physical explanation of the phenomena of high voltage and insulation. Until recently he was associated with Professor Niels Bohr, Nobel Prize-winning physicist, at the University of Copenhagen. At the Institute Dr. von Hippel will participate in the research program on high voltage, a coöperative project of the Departments of Physics and Electrical Engineering. His appointment was made possible by a joint grant from the Rockefeller Foundation and the Committee in Aid of Displaced German Scholars, of New York.

Another new member of the Faculty is Dr. Clifford B. Purves, a young British chemist, who has been appointed associate professor of organic chemistry and will devote himself to the field of cellulose chemistry. Dr.

Purves was educated at St. Andrews University in Scotland, where he was graduated in 1923 and awarded his doctorate in 1929. He has

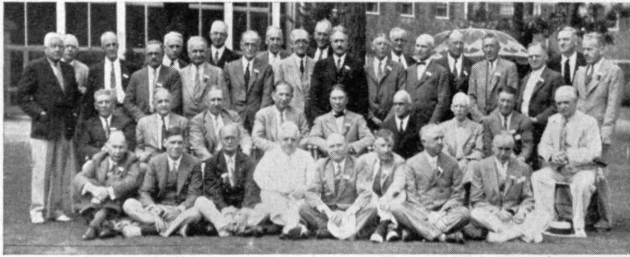
done notable research in carbohydrates, and in 1926 he came to this country for three years as a Commonwealth Fellow, working with Dr. C. S. Hudson of the National Institute of Health in Washington. He returned to Scotland in 1929 and for two years was a teaching fellow in the University of Aberdeen.

Among other appointments are those of Lieutenant Commander G. C. Manning, '20, as lecturer in the Department of Naval Architecture and Marine Engineering, and Major Kirke B. Lawton as Associate Professor in Military Science.

The field stations of the School of Chemical Engineering Practice have new directors this year as the result of the resignations of Professors Frederick W. Adams, '21, Director of the Boston Station; Charles M. Cooper, '25, of the Bangor Station; and Robert L. Hershey, '23, of the Buffalo Station — all of whom have accepted important industrial positions. Professor Adams has been appointed senior incumbent in a multiple fellowship established by the Pittsburgh Plate Glass Company at the Mellon Institute. Professors Cooper and Hershey have joined the staff of the du Pont company.

The new director of the Boston Station is Robert C. Gunness, a graduate of Massachusetts State College in 1932, who was awarded his master's degree in chemical engineering practice at the Institute in 1934 and his doctorate in science this year.





1901 at Oyster Harbors, Cape Cod. Forty-three present



1911 at Manomet Point, Plymouth. President and Mrs. Compton stand in the center. Ninety-four present



1916 at Saybrook, Conn. Seventy-two present



1926 at Winchendon, Mass. One hundred and seven present

FOUR CLASS REUNIONS

Invidiously singled out from the 16 held last June. Articulated with Alumni Day, as they now are, the five-year class reunions are assuming a new importance, attracting larger attendances

Howard S. Gardner, who succeeded Professor Cooper as director of the Bangor Station, received the degree of bachelor of science in chemical engineering in 1930 and his master's degree a year later. During his undergraduate career he was a member of the Institute Committee and Editor of *The Tech Engineering News*.

John E. Eberhardt, new director of the Buffalo Station of the Practice School, is a graduate of the University of Cincinnati in 1933 and was awarded his doctorate in science by the Institute this year. He was assistant director of the station for a year beginning in 1934, and since then has been an instructor in his department.

The assistant directors at the three stations are Henry J. Ogorzaly, '36, at the Boston Station; Roy P. Whitney, '35, at Bangor Station; George A. Akin, who is studying for his doctorate, and Charles W. Smith, '35, at the Buffalo Station.

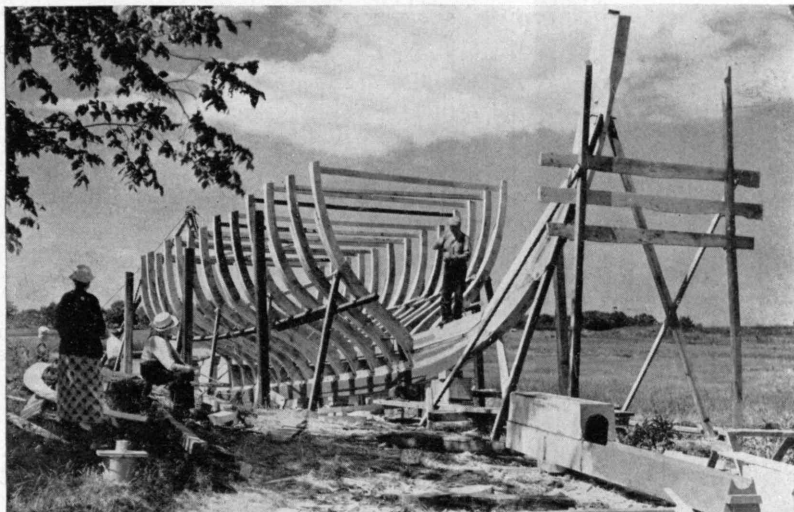
Four Deaths

SINCE the last Review, death has come to four Alumni, each of whom, during the past 50 years, contributed notably to the work and welfare of the Institute: Edwin H. Blashfield, '69 (1848 to October 12,

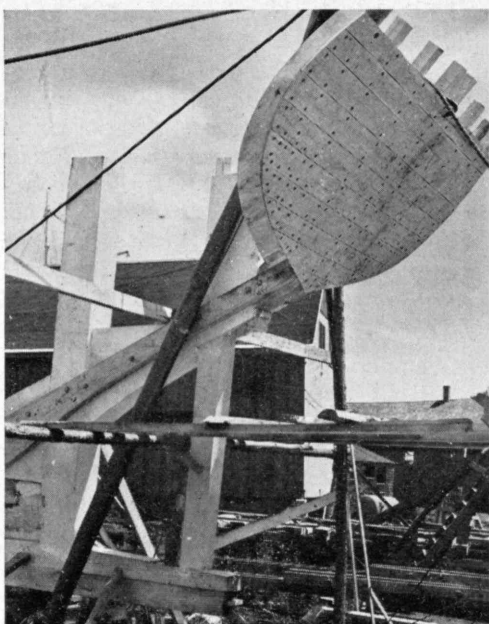
1936), painter of the murals in Walker Memorial; Francis H. Williams, '73 (1852 to June 22, 1936), long a member of the Corporation and its Executive Committee; Dana P. Bartlett, '86 (1863 to September 9, 1936); since 1886 a teacher in the Department of Mathematics, and George L. Gilmore, '90 (1868 to September 12, 1936), sometime member of the Corporation and President of the Alumni Association.

Mr. Blashfield, the recognized dean of American mural painters, was one of the first of that interesting group of men who studied at Technology and subsequently distinguished themselves in art. Like Gelett Burgess, '87, but unlike most of the others, who studied architecture, Mr. Blashfield enrolled in Civil Engineering. After his retirement in 1934, he received the Gold Medal of the National Academy of Design, of which he had been president, as he had of the Society of American Artists and of the National Institute of Arts and Letters. During his long career he painted murals for scores of interiors, notably the dome of the Library of Congress and of the state capitols of Wisconsin and South Dakota.

It was at the request of the late great Treasurer of the Institute, Everett Morss, '85, (*Continued on page 47*)



Above. An embryo in frame on the Essex flats

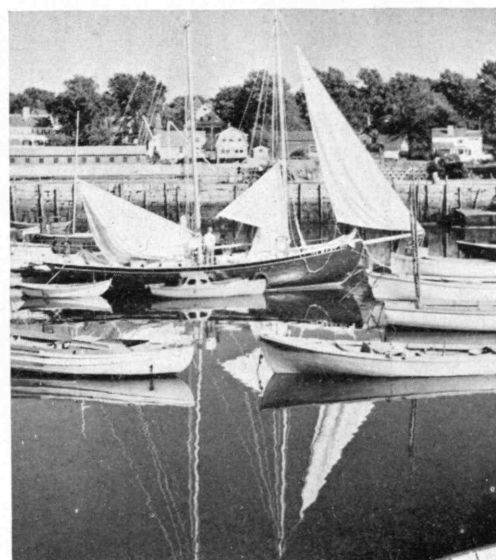


Above. The stern transom and horn timber set up in a yard in Rockland, Maine



Left. A small schooner being planked in Rockport, Mass.

Right. A few weeks later, the same schooner being outfitted with shimmering new canvas



Canvas . . .

Still Catches the Breeze!

The splendor of the clipper ship may be a thing of the past, but the sailing vessel still has its place on the Atlantic seaboard. Many people mourn its passing prematurely. The propeller has not completely banished billowing canvas, any more than the automobile has decimated the horse.

Sailing vessels are still being built. They continue to ride the waves for the fisherman, the coastwise shipper, and the yachtsman. They are dying too — in splendid isolation in forgotten harbors. But canvas still catches the breeze. Photographic evidence of this pleasant fact is presented on these pages by

Samuel Chamberlain



Above. Three views of the same Corinthian Yacht Club float during Marblehead Race Week

Below. No yachtsmen are more eager, adept, or completely enthralled by the sport than the youngsters



YACHTS

Nobody, of course, has ever called yachting dead. A bright week-end at Newport or Larchmont or Mattapoisett will give dramatic proof of the part yachting plays on the New England Coast. Race Week at Marblehead is even more eloquent. The same boundless enthusiasm grips all yachtsmen — from the venerable millionaire in his Class J cup defender to the near-broke youngster who sails a "Brutal Beast," subsists on sandwiches, and doubles up with four or five others in a single room during Race Week

Above. Fitting out for the summer, Mystic, Conn.

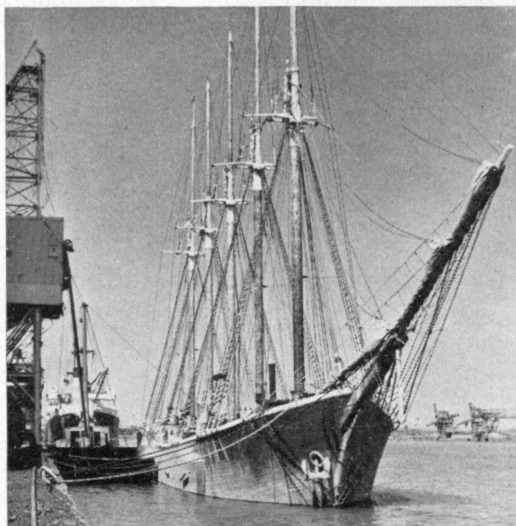


Above. Spring cleaning, Boothbay Harbor, Maine

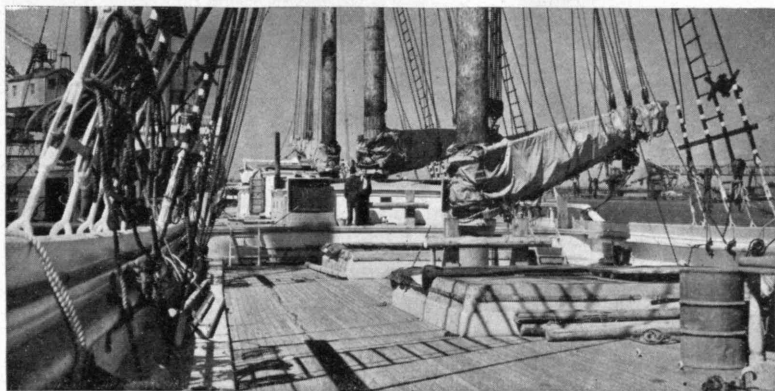


SCHOONERS

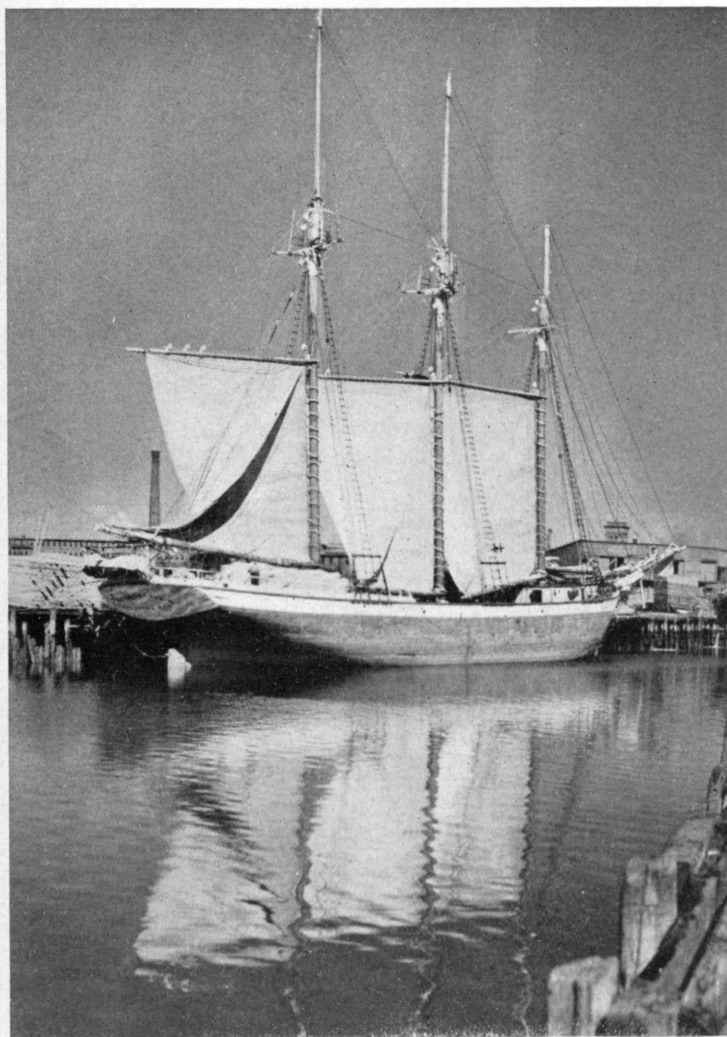
The coasting vessel is by no means discredited. Strange cargoes from the Caribbean and a great deal of lumber from the Pacific Coast and Canada still come to New England ports, unaided by motor power. The last of the "five-masters" to sail the Atlantic under the American flag is the Edna Hoyt whose bowsprit (above) somehow seems to comply with all the subtle laws of dynamic symmetry



Left. The Edna Hoyt at Mystic Dock, heavily and aromatically laden with guano. Though she is the last of her line, the vessel is of the post-War generation

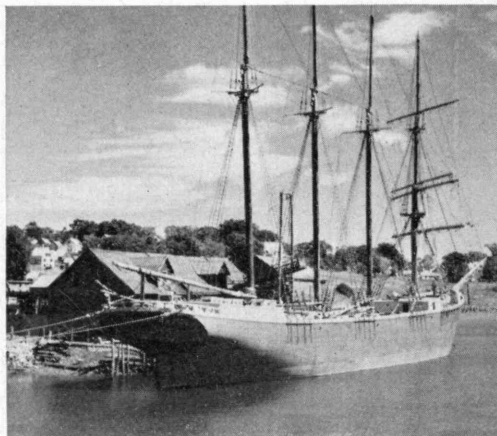


The Edna Hoyt has spotless decks, regardless of her cargo. Steam helps to hoist the sails now, and a small crew suffices



Above. After a rainy night, the Frederick P. Elkins hoists her sails to dry. She brings lumber and a strange, unaccustomed beauty to Lynn Below. In the other direction she (Mr. Elkins) reveals a different silhouette

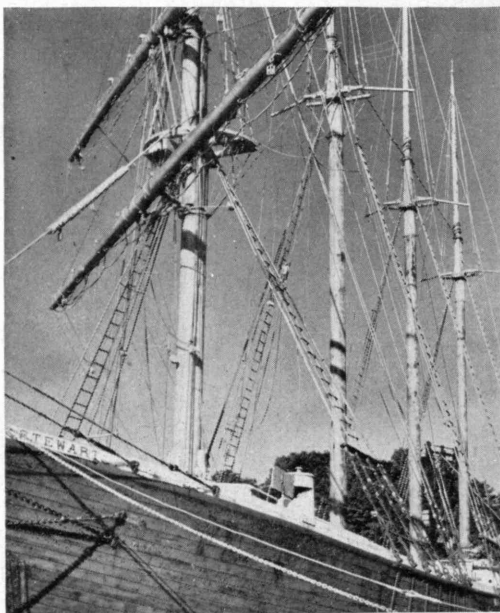




The *Reine Marie Stewart* is in good condition, anchored at Thomaston, Maine

DERELICTS

Many a New England port, particularly in Maine, is graced by an aged vessel whose sails have been reefed for the last time. They lie forlornly at forgotten wharves, awaiting an uncertain fate, perhaps to be broken up or to be converted into night clubs, or perhaps just to rot. Regardless of their destiny, they retain a serene and moving majesty

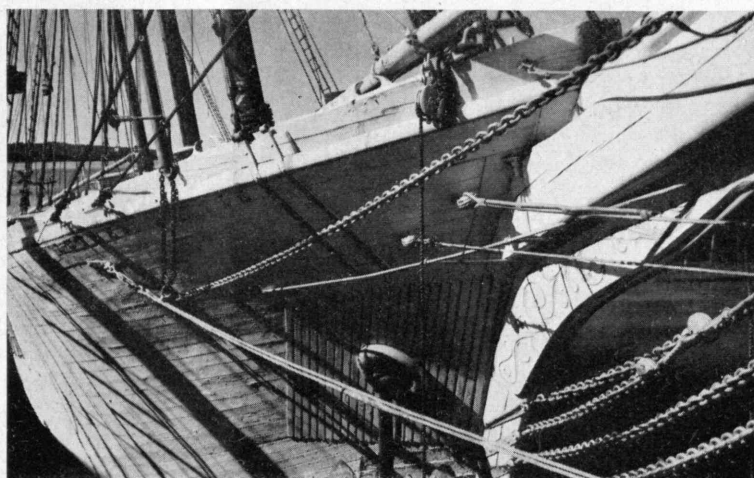


Left. Silvery masts of the *Reine Marie Stewart*, Thomaston

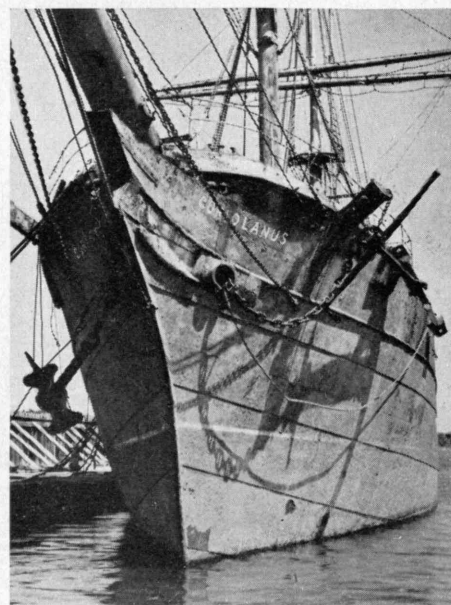
Below. A rotting hull in the foreground, and two three-masters which perhaps share the same fate. Rockland, Maine



Above. The deserted decks of two derelicts in Wiscasset, Maine



The prow of the once-proud *Luther Little*, Wiscasset



The 60-year-old bark *Coriolanus*, once the pride of the London and Calcutta jute trade, has recently taken her last voyage from the Bath Iron Works to Fall River, where she will be broken up



Margaret Bourke-White

The New Electronics

The Reign of Rugged Individualism in the Life and Works of the Free Electron

BY DONALD G. FINK

FEW engineers will challenge the statement that electronics is today the most active branch of electrical science. The extraordinary activity in this field is no doubt due in part to the fact that multi-millionaire industries, like radio and the sound movies, are completely dependent upon the electron tube. But whatever the reason, the pursuit of the electron during the past ten years has produced among other things a highly perfected system of television, has initiated a branch of physics, electron optics, which may eventually rank in importance with the optics of light, has produced new systems of transmitting and utilizing electric power, and has opened a portion of the ether spectrum in which all manner of new radio services are now developing.

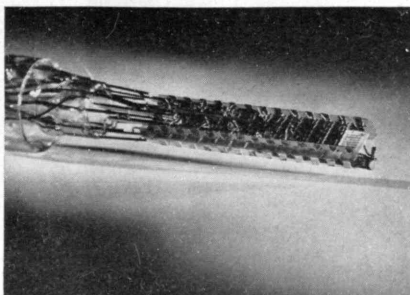
This impressive record is more amazing when it is remembered that the leading actor in the play is the electron, an entity once thought simple but now becoming more mysterious with each issue of the *Physical Review*. There are very few men in science who will venture to guess what an electron is, let alone what it looks like, or whether it is a wave, particle, or "wavicle." Even the figure on its electric charge has been revised within recent months and the famous 4.77×10^{-10} electrostatic

HOW, WITHOUT KNOWING WHAT AN ELECTRON IS OR WHAT IT LOOKS LIKE, THE ENGINEER IS PERFORMING WONDERS BY ASSUMING THAT HE KNOWS EACH ELECTRON INTIMATELY

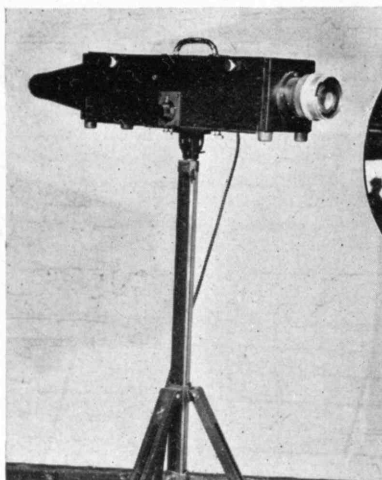
unit of Millikan has become 4.81×10^{-10} . The paradox grows when we realize that, while the physicist finds the electron receding in a mist of new facts, the engineer is performing wonders by assuming that he knows each electron intimately.

The ordinary or "garden" electrical engineer specializes in the overall effects of large crowds of electrons. He usually knows that the electric currents he deals with are swarms of electrons in motion, but he is content to let a swarm remain a swarm. Not so with the electronic specialist. He is a Republican; he believes in rugged individualism. To him the electron is paramount *per se*, not as a member of a crowd. In view of the widespread indecision regarding the exact nature of a single electron, this point of

view is not an easy one to defend. Knowing the nature of an electron, however, is much more interesting than useful. It is not important for engineering purposes to know what a single electron is, but it is important to know how it acts. Fortunately, there is much reliable information on electron behavior, and the electrical engineer is finding that he must draw on this information more and more in the design and construction of new and more versatile electronic devices.



Vacuum tube architecture. The ingenious electron multiplier which can amplify a current millions of times



Above. A newsreel scene reproduced electronically. Left. Equipped with a glass lens for focusing, this electron telescope can see in the dark if ultraviolet or infrared light is used

Widening the Ether

A most important accomplishment made possible by the individualistic approach to the electron is the extension of the useful spectrum of radio waves. Ordinary radio waves are produced by alternating electric currents, which reverse themselves periodically at a very rapid rate, about a million times per second in broadcasting, for example. The generation of these million-per-second alternations, a job now assigned exclusively to electron tubes, is an old accomplishment in electronics. The new electronics is concerned with alternating currents which reverse as often as a *thousand-million* times per second.

It may well be wondered why these hyperactive alternating currents are useful. The reason is primarily economic. The luminiferous ether, in which radio waves are fondly supposed to travel, is a public domain of limited extent. By this is meant that every radio station, if it is to operate free from interference of other stations, requires a definite "slice" in the ether spectrum. The station must operate on a definite, assigned frequency, *i.e.*, the current in its antenna must reverse itself at a prescribed rate. Even with judicious duplication, the number of available assigned frequencies is so limited by the interference problem that the demand for them now far exceeds the available supply.

There has resulted great pressure to extend the spectrum by finding higher and higher frequencies on which to assign stations, which means generating current at faster and faster rates of alternation. The search for more room has now reached the region of currents which alternate faster than 30,000,000 times per second (corresponding to radio waves less than 10 meters in length). The upper limit now available is approximately a billion times per second, corresponding to radio waves 30 centimeters long.

The generation and amplification by means of conventional electron tubes of these ultrahigh-frequency radio waves have until recently been accomplished with great difficulty, and it was not until attention was paid to the so-called "transit-time" of each electron that the impasse was cleared. The transit-time of an electron is the length of time it takes each electron to pass from the central electrode (emitter) of the tube through the

vacuum to the outermost electrode (anode). During this time, while the electron is "afloat," the intermediate electrode (grid) of the tube exercises control over the electron flow, that is, over the electric current flowing through the tube. If a current of, say, 100,000,000 alternations per second is to be generated in the tube, the electric charge on the grid is made to vary that many times in a second. By this means, the changes in charge on the grid of the tube are reproduced as changes in current flow through the tube, and the process of generation or amplification is carried out with maximum efficiency and fidelity. But this process supposes that the charge on the grid does not change appreciably while each electron is in flight.

If the charge on the grid changes many times while each electron is passing from emitter to anode, then the individual grid-charge changes do not produce individual changes in the tube current; they produce instead an overall change in the current which is the integral sum of the effects of the several grid-charge changes which occur during the electron flight. To guard against this possibility it is of importance to know how long the electron is in flight, that is, to know the value of its transit-time.

In calculating the transit-time, use is made of nearly all the available items of information concerning the individual electron. The mass (10^{-27} grams) of the electron is known to considerable accuracy. Also, since its individual negative charge (4.81×10^{-10} e.s.u.) is known, it is possible to compute the force of attraction exerted upon it by a definite amount of positive charge on the anode. Knowing the mass and force of attraction, the acceleration which the electron undergoes is readily deduced by Newton's law; then, knowing the distance over which the acceleration takes place, the time of flight is obtained. The problem is somewhat complicated by the fact that the force of attraction increases as the electron nears the anode, by consideration of the magnetic field set up by the current flow, by the initial velocity of the electron as it leaves the emitter, and by relativity increases in mass at extremely high speeds, but the solution is still determinate. In typical cases, such as a radio tube operated at rated voltages, the electron completes the flight in about one one-hundred-millionth of a second.

Consider now the changes in charge on the grid during the flight of the electron. In an extreme case the grid charge may change a thousand-million times in a second; that is, in the case cited it changes ten times while the electron is moving. Under these conditions, the electron flow is controlled not by a single change of grid charge but by the integrated effects of ten such changes. The transfer of grid-charge change to anode-current change is thus obviously no longer than in one-to-one correspondence. Actually this effect of the electron transit-time is noticeable even when the grid changes are much slower, in fact if they are at all appreciable during the electron flight. For this reason the generation and amplification of current alternations faster than about 50-million changes per second are difficult with conventional tubes. But if the transit-time can be markedly reduced, then the rate of possible variation increases in proportion.

The transit-time can be reduced by making the electron go faster (that is by attracting it to the anode with

a higher positive charge) or by reducing the distance it must travel between the emitter and anode. The latter method is more convenient since it involves simply constructional details. No fewer than four different types of tubes with extremely small spacings between the emitter and anode have appeared within the past three years. In general they are small tubes; one of the most widely used is called an "Acorn" tube because it resembles an acorn in both size and shape. Another tube which made its appearance only last summer is somewhat larger but built on the same principle; it can generate six watts of power while varying its strength one thousand-million times per second. The transit-time is not the only consideration in these new tubes because electrical capacitance, which by-passes (and thus reduces the effect of) charge variations on the grid, is also reduced by using smaller dimensions. But reduced capacitance with reduced transit-time makes a tube of extraordinary capability. Without these new tubes it is safe to say that the utilization of the ultrahigh-frequency radio spectrum would be so severely restricted that large-scale public services in this region could not be contemplated.

So important are these new ultrahigh frequencies that the Federal Communications Commission sat for two weeks last June hearing evidence from commercial and technical experts on the uses to which they might be put and on their relative values to the public. A partial list of the suggested services contains: television, high-fidelity local broadcasting, facsimile broadcasting, maritime telegraph and telephone service, airport and aircraft service, civil and military government services, police radio, public utility communications, forestry fire service, equipment for motion pictures, geophysics, safety equipment, navigation aids, direction finders, beacons, and even interoffice telephone systems. Certainly there will be little trouble in disposing of the new frequencies to services where they can do much good, public and private.

Mercury and Kilowatts

Most, but not all, of the latter-day electronic wonders are based on a knowledge of single-electron behavior. An outstanding exception, the transmission of electric power by electronic means, goes to the other extreme and relies on a phenomenon which is extremely difficult to analyze in terms of fundamentals. The phenomenon is the ionization of mercury vapor, which provides such a copious supply of electrons for the carriage of electrical energy that it can be used in electron tubes capable of transferring and controlling all the power necessary for a good-sized community.

In the Research Laboratories of the General Electric Company in Schenectady is a 15,000-foot stretch of transmission cable which may some day rest coiled in a museum. This cable has been transmitting daily about 2,500 kilowatts of power by direct current, in contrast to the 99% of all public utilities from Montauk to Boulder Dam which use alternating current. Direct current has been recognized for years as superior in many respects; savings in power-factor losses and insulation alone would justify its use were it not for the fact that direct current cannot be generated economically by rotating

machines at the high voltages necessary for efficiency in transmission. In the new system the power is generated as alternating current in conventional machinery, then changed to direct current by mercury-vapor electron-tube rectifiers, transmitted over the line, then converted back to alternating current (in which form it can best be distributed for use) at the far end of the line by mercury-vapor electron-tube converters. Both rectifiers and converters must carry the full load current of the line, which is well over 100 amperes.

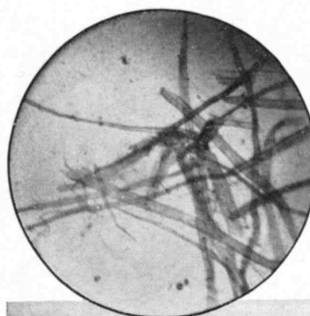
Now 100 amperes is about 10^{21} electrons passing a given point in a second; it might well be thought, therefore, that a single electron could be lost in the shuffle. It can be. The current is carried through the tubes by electrons, true enough, but a *single* electron in such a tube is of less importance than a flea in a concentration camp.

These large-scale industrial applications of electron tubes are in the development stage, but they hold forth much promise of usefulness to society. In fact, from the standpoint of the nation's dependence on transmitted power, they may yet rank as the most important of all electronic tools.

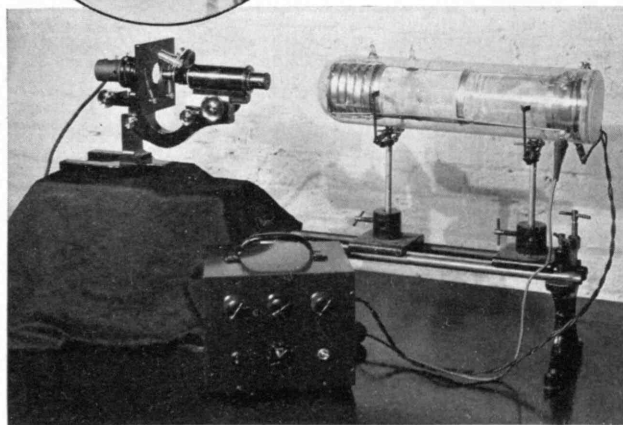
Electronic "Sight at a Distance"

For some strange reason television, as a budding branch of communications practice, has been *persona non grata* in many of the best technical schools. Perhaps its past history and future ambitions echo strangely in the hallowed halls; perhaps the professors are alarmed, with some justification, at the prospect of a new super-radio which can assault and insult the eyes as thoroughly as the ears. But, if few of the leading technical curricula include a study of television practice, the commercial interests have more than made up for the deficiency.

The Radio Corporation of America is currently engaged in spending one million dollars of its stockholders'



Below. The electron telescope used to view images cast by a microscope. Left. An image produced on the fluorescent screen of the telescope tube. This arrangement permits the examination of microscopic specimens by infrared light, the tube serving to render the image visible to the eye



money in experiment, engineering, and (it is to be expected) much heavy pondering, all directed to the not too far distant introduction of television as a commercial service. The highest structural steel in the world, to cite one instance, has been designed, bought, and installed with part of that appropriation; it is the antenna of the RCA television transmitter atop the Empire State Building in New York. By the admission of the directors of the project, television service is at least two years away, and when it comes it will be confined to large cities and to patrons who can afford a \$500 receiver. But it is without doubt the *enfant terrible* of the radio industry.

We are not here concerned with television, which has a fascinating story in itself, except as it is related to the new electronics. The connection is very close. Modern television is, in fact, part and parcel the property of electronic specialists. The earliest television was mostly mechanical gadgets; the last of them was removed from it less than three years ago. Today, the system (that system being developed by the leading groups) is completely electronic. In the whole "works," from camera in the studio to viewing screen in the receiver, there is not a single moving part — unless electrons be parts, for it is they who do the moving. The original scene in the studio is transformed by the television camera into an electron image, which is a plane-shaped crowd of electrons whose density is proportional to the lights and shadows of the scene. The electron image is removed (as a one-dimensional "signal") from the camera through the agency of still other electrons, thence transferred to a radio (electronic) transmitter which, using the ultrahigh frequencies already discussed, releases the signal to the ether. At the receiver the signal is detected and amplified by electron tubes (including one, or more, "Acorn" tubes), and finally converted into a stream of electrons which plays, in the manner of a garden hose, on a fluorescent screen, thus recreating the image. Synchronism between transmitter and receiver, necessary to keep the image-recreating process on schedule, is maintained by highly curious impulses generated by still other electron tubes; this item was the stubbornest of all the parts of the system, in that it was last to yield to electronic methods.

The results, up to now demonstrated only to journalists and patent licensees, are truly remarkable. The whole system, as a *tour de force* in the utilization of free electrons, far outranks every other achievement in the science, and, as might be expected, from it have developed by-products of great technical significance.

Television's Stepchildren

Electron optics got its start before the electron as such was discovered. Cathode rays, first produced at the end of the last century and later shown to be streams of high-speed electrons, were reflected and made to cast shadows in a highly optical fashion. Long before that time Newton himself had laid the foundation by pointing out that the phenomena of optics could be more or less satisfactorily explained by supposing that light rays were streams of corpuscular bodies, a theory which he held to his death. But the electron optics of the early days were rudimentary, to say the most.

In 1927, Davisson and Germer of the Bell Laboratories earned immortality in the field of physics by announcing their discovery that a beam of high-speed electrons can undergo diffraction. The inference is that electrons must have wavelike properties, if indeed they are not completely wavelike. The analogy between light waves and electron beams thereby became so close that a comparison of their relative utility in optical instruments was inevitable. The question reduced itself, in one instance, to the relative resolving power of a conventional microscope and an electron microscope. The resolving power determines the maximum obtainable magnification and is, in turn, determined by the diffraction pattern formed by the rays used. To the amazement of every one concerned, it was found that the "wavelength" of electrons permitted higher theoretical magnifications than did the shortest wavelength of visible light. Actually, to the writer's knowledge, this increased magnification has not yet been practically attained in any electron microscope yet constructed, but the possibility, even probability, of its attainment remains.

With this development of electron optics already available, television appeared with a need for all that the new optics could offer. The electronic television camera and the image-recreating tube in the receiver have both been built on electron-optical principles. In fact, during the past five years an amazing reversal of position has taken place. Television research, with its resources of money and man power, has so absorbed electron optics that it has become the principal source of new electron-optical devices and theories.

Two results which have come from television's preoccupation with electron optics are the electron multiplier tube and the so-called electron telescope. These developments are stepchildren in the art because they are not essential parts of the television system. Both devices are outstanding examples of the success which has attended the regimentation of electrons into orderly groups.

Electron Multiplication

When a single free electron is directed at high speed toward a surface of cesium-oxide silver, its impact thereon is sufficient to blast from the surface as many as ten other electrons. Hence where once flew a single electron, ten others appear to take its place. This process has been given the name "electron multiplication"; it is one of the most direct methods of increasing the strength of an electric current yet discovered.

Using this curious action, Dr. V. K. Zworykin, one of television's leading experimenters, produced last year a highly ingenious electron multiplier tube. In its simplest form, this tube consists of two sets of flat metal plates, coated with cesium-oxide silver inside an evacuated tube, and arranged in two parallel planes facing one another and staggered so that an electron can bound back and forth between the sets of plates, hitting each plate successively. The original electron is obtained by the action of a beam of light on the first plate, which is photosensitive and therefore frees electrons when illuminated. This first electron is attracted to the next plate in order, because of the positive charge placed on the plate by an external battery. (Continued on page 44)

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ECLIPSE IN AK BULAK

(Continued from page 21)

ments of the instruments could be performed only at night, camping arrangements were set up on the observing site and were used with increasing frequency as the time of eclipse approached. Two trucks, brought in from Orenburg, transported our crates and boxes from the nearest railway siding, but afterwards we had to rely on more primitive methods of hauling. A camel cart from the town supplied us with boiled water for drinking and ordinary water from a neighboring stream for photographic purposes and general use. As hot weather came on, the camel cart delivered the ice that had been sent specially from Kuibishev, 250 miles away, to cool our store of photographic plates. Ox teams brought us our supplies of timber and bricks. The two small gasoline-driven Pioneer Gen-E-Motors ran almost continuously during the seven weeks' stay in camp. At the time of eclipse, they provided electricity for camera motors, but meanwhile they furnished current for many purposes — for lights at night, for the radio receiving set, for the electric drill and soldering irons, and for the spark gap we used as a light-source in focusing the spectrographs. Because our time for preparation at home had been limited, much work remained in assembling the spectrographs in the field. Of the six weeks we spent in Ak Bulak before the eclipse, not a day could be wasted.

Trouble of a serious sort greeted the radio party. Before leaving home we had received the assurance that alternating current at a particular voltage would be available at Ak Bulak 24 hours a day and all the radio equipment had been built accordingly. On arrival, we discovered to our consternation that the town's electric supply consisted of direct current available only from 9 P.M. to 2 A.M. After frantic days of speculation and uncertainty, we finally received word from the Academy of Sciences that they would install a special generator or, if that proved to be impossible, they would pay the cost of moving the radio part of the expedition to a site where the desired electric supply could be obtained. The village flour mill had a good Diesel engine and a small generator was located in Orenburg and brought down. For almost a month the mill was shut down in order that we might have an undisturbed source of power until after the eclipse. The difficulty in finding sufficient wire to transmit the power from the mill to the receiving instruments was likewise solved in the course of time. The transmitting equipment was installed at the mill and operated by remote control from the receiving position. After power was finally available and distributed, very little time remained for adjustment of the instruments as the program called for some days of continuous observations both before and after the eclipse to determine the normal conditions in the ionosphere over that part of the world.

The inhabitants of Ak Bulak and vicinity exhibited a restrained but friendly interest in the visitors and their work. A day or two after the packing cases had been unloaded on the hilltop, an aged Kazak, with shovel on his shoulder, walked over to visit us. His costume and cast of features were *(Continued on page 38)*

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CHARLES RIVER ROAD AT KENDALL SQUARE

CAMBRIDGE

MASSACHUSETTS

ECLIPSE IN AK BULAK

(Continued from page 36)

typically Asiatic. We were somewhat startled when he stepped up to one of our packing cases and started slowly to read aloud the stenciled address on it: "*Harvardskaya Expedicia*, Academy of Sciences, Moscow, Ak Bulak via London and Leningrad." We later learned that in the Soviet campaign against illiteracy, the Arabic method of writing the Kazak and other Asiatic languages has been replaced by the Latin (Western European) alphabet. Many other visitors followed, particularly on rest days when some came from even as far as Orenburg, but no other visitor represented so strikingly what is going on in Central Asia. In town the natives were quite interested when some of the radio men used climbing spurs in putting up wire on the poles between the mill and the cars on the siding.

Our confidence in the local weather, which had grown rapidly as time went on with one morning after another clear, received a bad setback when a steady rain started on the morning of June 16. The drizzle continued the next day as well and we shall long remember the complete gloom radiated by our otherwise jovial host, Dr. Gerasimovič, when he brought us reports of unfavorable weather from all the stations in the U.S.S.R. along the eclipse track. "Seven thousand kilometers of rain," he said. Most of the morning of the 18th was clear, however, and we pushed forward last-minute adjustments, of which there were all too many. While the east was clear at sunrise on the eventful morning, the general cloudiness soon began to increase until the sky was completely overcast.

From then on we had only occasional fleeting glimpses of the sun until about "first contact," an hour before totality, when the clouds, withdrawing westward, formed a sort of arch over the sun. The appearance of the formation was spectacular. In the east, beneath the archway, the sun shone brilliantly, while heavy black clouds pressed down on us over the rest of the sky. We felt that we were looking out through the door of a dark cave into the sunlight. A low-flying airplane, thoughtfully provided by the government, sprayed poisonous fumes over the fields in the direction of the sun to protect us from swarms of locusts that might rise up and eclipse the eclipse.

As the moon covered more and more of the sun, the temperature fell perceptibly. The meteorological effect of the cooling saved the day for us, since it caused the clouds to descend into warmer strata and evaporate. At totality the sky was entirely free from clouds, except for a minute stratus formation that scintillated with delicate colors during the moments of darkness.

The solar crescent broke up momentarily into a series of brilliant beads, caused by sunlight filtering through valleys between the lunar peaks. As these disappeared, the solar corona, of which we had been conscious for some seconds, flashed out with its gracefully curved streamers stretching at least two million miles, almost three diameters, above the surface of the sun. In shape it closely resembled a five-pointed star, and many Russians regarded as symbolic its close resemblance to their national emblem. There (Continued on page 40)



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ECLIPSE IN AK BULAK

(Continued from page 38)

were many prominences, like flames, projecting around the solar edge. Their color has generally been reported as red in previous eclipses, but Dr. Menzel, who observed with a three-inch telescope, noted them as being definitely purple or lavender, the shade being attributable, perhaps, to an exceptionally intense emission of the violet calcium lines. Dr. Gardner's color photographs showed much the same effect.

During the eclipse, silence was broken only by the hum of generators and motors, the metallic clicking of the automatic cameras, the counting of the time-keeper, and an occasional sharp command from the director. The great crowd of natives that had gathered to watch the eclipse was quiet and orderly. The recent story, disseminated by certain newspapers, of widespread terror was concocted by some imaginative and none-too-conscientious reporter. The statement that "a woman and her daughter came screaming into Dr. Fisher's tent, crying that a dragon was devouring the sun," is entirely fiction, including the item of Dr. Fisher's tent which did not exist.

Observations with the spectrographs were confined to the two minutes of totality with additional exposures taken before and after. Observations with the supplementary instruments covered longer periods. Miss Swope took photographs with the coronal telescope at intervals throughout the partial phase as well as during totality. Observations with the Weston illumination meter, operated by Mrs. Boyce and Mrs. Benfield, began at sunrise and lasted until noon except for the cloud interruptions, and a similar program, for comparison purposes, had been carried out on the previous day.

Development of the films and plates began shortly after the eclipse and consumed most of the next three days. The majority of the films were standardized in order to make possible quantitative photometric measurements later on. All photographic processes were carried out in water hauled by camel cart from a distant stream. Filtering twigs, dirt, and even minnows and pollywogs from four barrels of water proved to be no small job—as the women of the party will attest. Fortunately no serious accidents occurred to the films. Only when development was complete were we really sure that all the instruments had functioned properly.

We were struck at once by the unusual brightness of the corona at this eclipse. The green coronal line was recorded in one-second exposures fully 30 seconds in advance of totality, whereas at the 1932 eclipse an exposure of 30 seconds during totality with a spectrograph of comparable speed gave a much fainter image of the line. Readings with the illumination meter gave us the result that brightness of the corona was from 50 to 100 times greater than that of the full moon, where in previous eclipses the highest recorded intensity was about equal to that of the full moon. While the coronal spectrograms are still in process of measurement, they definitely show a number of new coronal lines and make possible better measurements of certain previously known lines.

(Continued on page 42)



How SCIENCE Makes Good Eggs Better

VITAMIN D potency increased tenfold, taste improved, shell strong and perfect. Superior eggs—and more of them—because the poultry raiser has systematically treated his flock with ultraviolet light. More and better milk, healthier cows, a lower bacteria count—also the result of ultraviolet treatment. These are benefits which are passed on to you in the form of better-quality food products.

Superior vegetables for your table—earlier, sturdier plants are produced by electric sterilization and heating of the soil. Incandescent lighting stimulates and controls

plant growth. X-ray treatment of seeds and bulbs is producing new and improved varieties of plants. These and other new movements in agriculture are increasing the certainty of a high-quality food supply.

In these movements General Electric is co-operating with many agricultural laboratories and farm experts. Some of these developments would have been impracticable without earlier G-E research, for from the Research Laboratory, in Schenectady, came the necessary tools for investigation and application of its results.

*In every field of productive endeavor, G-E research is contributing to
the progress toward higher standards of living*

GENERAL  **ELECTRIC**

ECLIPSE IN AK BULAK

(Continued from page 40)

The spectrophotographic results from the expedition will be used for a number of special investigations, including the study of the corona, as mentioned above. For example, we have already noticed that the chromospheric lines of helium and ionized helium are from five to ten times more intense than they were at the 1932 eclipse. It now appears to be established definitely that the strength of these lines is related to the intensity of emission in the overlying corona. The observations corroborate the previous suspicion that the spectrum of the chromosphere is subject to enormous variations. Microphotometric reductions of the moving-film spectra should yield important data concerning the gradient of density in the solar atmosphere. Dr. Wallace R. Brode, who photographed the flash spectrum with a moving-film instrument of original design, is planning to make a study of the molecular bands present in the spectrum.

On the evening of June 23, the city of Orenburg gave a banquet to the several Russian and foreign expeditions located in that district. It proved to be a magnificent affair, with x courses and y different varieties of liquor, where x and y stand for undetermined numbers greater than ten. At the close of the banquet Comrade Vasilief, chief of the Orenburg district, presented each expedition member with one of the famous Orenburg shawls — a delicate creation of finely woven wool. Thus far none of us has tested the statement of the manufacturers that the eight-foot square shawl can be drawn through a wedding ring, but there seems to be no reason to question its truth.

About 12 hours' work by all hands the following day completed the packing of the astronomical equipment. Our boxes and cases were again loaded into freight cars for the return journey. We returned to the cars in Ak Bulak for a midnight dinner and to sort out our personal belongings. The radio men were to remain some days longer to finish their program of comparative measurements on days when no eclipse occurred. About 1 A.M. the President of the local soviet and some of our Poulkova friends called to bid us farewell as our car was scheduled to be attached to the 5 A.M. train for Moscow. It mattered little that the train was some hours late in leaving, for now we really had gained faith, as our Russian friends were always telling us, that everything would be all right.

Since leaving Russia four questions have been asked us more frequently than all others. In attempting to answer them we should remind our readers that the cross section of Russia we saw was rather limited but definitely off the beaten track.

1. "Are the Russian people happy and contented with the present *régime*?" Despite newspaper reports of plots, the people give every evidence of satisfaction with the present *régime*. Pre-War days are nearly forgotten and the present is judged in the light of the more immediate past, *i.e.*, over the last five to 15 years. All observers will agree that general conditions are far better now than then and the people feel that the system is finally beginning to pay them the dividends they earned in the lean years just preceding.

2. "Were we allowed to see everything we wanted?" We think so, except the inside of the Kremlin, which was closed to all visitors because of certain political strife. At no other time were we conscious of being kept away from anything we desired to see excepting, of course, certain factories and social institutions that could be visited, as in any country, only by special arrangement. On the other hand, Russians have always been excellent showmen. With almost religious ardor they make a tremendous effort to have all their visitors see all the things they are so proud of. This enthusiasm could often give a visitor the impression that he was being kept away from certain things, as could also the language difficulties that he would face if he were to try traveling independently. Thanks to our scientific friends we escaped much of the routine sight-seeing.

3. "Did the Russian Government really coöperate with your expedition?" The answer to this question is contained in the foregoing account, but one additional incident may serve to show the degree of coöperation as well as its sincerity. One day, at the camp, a packing box we had been using for refuse caught fire. We easily extinguished the blaze, but next day the chief of the local fire department, who had evidently been notified, drove out to our camp and set up numerous fire extinguishers at strategic points.

4. "What is the place of science in the Soviet state?" The material resources behind scientific work in Russia are very great. There are many able scientists but the younger generation of them is definitely handicapped by lack of contact with the outside world. Part of the difficulty arises from the national language and part from the barriers that the Soviet government puts in the way of foreign travel by its citizens. How much these handicaps will be reduced remains to be seen, but even with them much fruitful work is being done. A German physicist, now a member of the staff of a Russian research institute, said to us: "When we ask the government authorities for money for an instrument of a certain size and price we have to show cause why a larger and more expensive one would not be better for our purposes. With such backing the only limitations in scientific work lie in the minds of the scientists."

Those Who Helped

Some idea of the extent, if not the individual items, of the auxiliary equipment necessary for eclipse work in the field may, perhaps, be gained by perusal of the following list of individuals, institutions, organizations, and companies who contributed in one way or another to the success of our expedition. To one and all we wish to express our heartfelt thanks for their generous coöperation.

The expedition was made possible by grants from the Milton fund and Clark bequest of Harvard University, from the American Philosophical Society, and from the American Academy of Arts and Sciences. A generous donation from RCA Communications, Inc., enabled the expedition to carry on the desired program of radio research. Our tools, machine, wood-working, and so on, came from Ames Baldwin Wyoming Company, Behr-Manning Corporation, The Black and Decker Manufacturing Company, Brown and Sharpe Manufacturing Company, Clayton and Lambert Manufacturing Company, The Cleveland Twist Drill Company, Greenfield Tap and Die Corporation, Millers Falls Company, North Brothers Manufacturing Company, Peck Stow and (Concluded on page 44)



DOWMETAL'S PLACE IN THE SUN

Lightest of all structural metals, it overcomes the hindrances of useless weight

Offering the sizable gain of being a full third lighter than aluminum, with comparable strength and durability, DOWMETAL (magnesium alloys) is rising fast in importance and adoption.

Its unique lightness has, on several occasions, served science. It furthered the stratosphere flights by achieving greater lightness in gondola construction. It traveled to Antarctica with



The Harvard-Massachusetts Institute of Technology Expedition established its equipment at Ak-Bulak, Siberia, in May, 1936, to secure spectra of both the corona and solar chromosphere.

Above is shown one of the special cases, entirely constructed of Dowmetal, housing four spectrographs. The cameras carried a film nine and one-half inches wide automatically exposing every second and giving a continuous study of the spectra during the eclipse.



Above is one of the spectrographic studies selected from a total of seven hundred individual spectra secured during the eclipse. These spectra covered the complete spectral range from far infrared to the extreme ultra violet. The particular one shown is of the blue, violet and ultra-violet coronal spectrum.

At the top of the page is shown the extreme coronal extensions of the sun during the 1936 eclipse. These extensions rose to distances of more than a million miles from the solar surface. Photographed by Doctor Donald Menzel with a Zeiss Contax camera equipped with a telephoto lens.

Admiral Byrd. This year it aided the Harvard-Massachusetts Institute of Technology Expedition sent to Siberia to secure spectrographic studies of the sun's corona and chromosphere.

But, more conclusive evidence of its great value and practicability is found in its recent adoption by The Hoover Company for the new 150 Hoover Cleaner.

The aircraft industry, of course, takes full advantage of its marked lightness and strength. But, also, it is used in typewriters, foundry flasks, buses and trucks, portable power tools, air conditioning equipment, machinery of many kinds, and a host of other applications.

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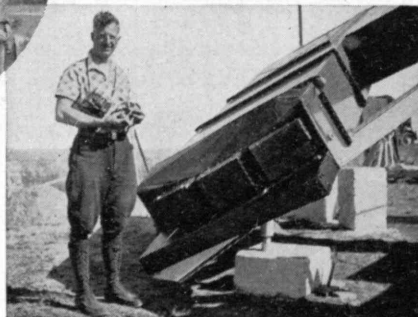


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Speaking of Dowmetal, Doctor Donald H. Menzel, Director of the Expedition, said: "We chose Dowmetal because of its combined rigidity and lightness."

Russian natives showing surprised pleasure at the lightness of Dowmetal. Despite the size and substantial construction of equipment, Dowmetal cut weight to a point where handling and erection were carried out with a minimum number of men.



ECLIPSE IN AK BULAK

(Concluded from page 42)

Wilcox Company, Fayette R. Plumb, Inc., Plymouth Cordage Company, Service Sales Corporation, Simonds Saw and Steel Company, Stanley Electric Tool Company, Inc., The L. S. Starrett Company, and Yale and Towne Manufacturing Company.

Our electrical equipment was manufactured by General Electric Company, Pioneer Gen-E-Motor Corporation, Weston Electrical Instrument Corporation, Willard Storage Battery Company, Burgess Battery Company, Warren Telechron Company, and Holtzer-Cabot Electric Company. For communication with the United States, which was accomplished either directly by radiotelegraph or via England by radiotelephone, we took along a 45A transmitter built by the Collins Radio Company. For receiving at the camp we used a Hammarlund "Super-Pro." Tubes were furnished by Amperex Electronic Products, Inc.

For the design of the automatic cameras we have to thank Mr. E. S. Hine of the Folmer Graflex Corporation as well as the institution he represents. In the construction of these machines we employed flexible couplings from the S. S. White Dental Manufacturing Company. The quadruped polar axis was mounted in Timken bearings, while the smaller coronal camera axis was supported in bearings by S K F.

Other miscellaneous equipment, camp supplies, kitchen accessories, and so on, were obtained with the cooperation of the Coleman Lamp and Stove Company, The David T. Aber-

crombie Company, the Linguaphone Institute, Hookless Fastener Company, Sears, Roebuck and Company, and S. S. Pierce Company. The gift of The Dow Chemical Company we have acknowledged not only in the above account but indirectly by calling the Ak Bulak eclipse site "Camp Dow." With the Bausch and Lomb laboratory spectrograph we obtained excellent slit spectra of the corona, and the coronal photographs obtained with a Zeiss Contax miniature camera with telephoto lens were exceptionally good, showing the five-pointed star effect clearly. The concave mirror ground specially for the expedition by The Amateur Telescope Makers of Boston was chroaluminized for us by the Evaporated Metals Company. Our photographic supplies were obtained from the Eastman Kodak Company, where Dr. C. E. K. Mees and Dr. C. Stand coated special film emulsions for our expedition and served us in a variety of ways. The New York Times cooperated with us, as also did the United States Lines.

Lick and Yerkes Observatories lent us eclipse equipment. Dr. R. W. Wood found numerous diffraction gratings for us and Mr. C. W. Elmer furnished the expedition with a coronal camera. We also wish to thank Mr. A. Cressy Morrison for assistance.

Even to list, let alone express adequate appreciation to every one who lent aid to our expedition — Russian government officials, local and national, Intourist, Inc., as well as the many persons at home who helped us in our work — would require more space than we have at our disposal. The assistance of these people is nonetheless appreciated despite our failure to mention them specifically here.

THE NEW ELECTRONICS

(Continued from page 34)

Hitting this plate, the electron frees anywhere from two to ten secondary electrons, or five as a rough average. These five electrons are then attracted to the next plate where they liberate 25 electrons; the 25 fly to the next plate, there liberating 125 secondaries. The cumulation continues for ten steps, producing at the last plate 5^9 electrons, which is 1,953,125 electrons for each originating electron. This vast increase in number is a corresponding increase in the current which the electrons represent, hence the current amplification in this one tube is of the order of two million times.

Such a tube has been used to reproduce the sound track of a motion picture film. The modulated light beam from the sound track falls on the first plate. The electron current leaving the last plate is fed to a loudspeaker where it delivers enough sound to fill an auditorium capable of seating 2,000 people. One six-inch tube and its associated battery thus take the place of the complicated roomful of apparatus now used to reproduce sound in the movies. Note that the whole process involved depends on the direction of the ever growing electron stream from plate to plate in the proper succession. It is, in other words, regimentation of a kind to arouse the envy of any dictator.

Seeing the Infrareds

The electron telescope is another of Dr. Zworykin's inventions. It can transform a moving image from infrared light to visible light instantaneously, a feat formerly accomplished only by photography and then only with an intervening developing process. The telescope

can at the same time magnify or reduce the size of the image within the limits of a five-to-one ratio, and the degree of magnification can be controlled electrically. Here is an electron-optical instrument which is quite typical of the art and of its potentialities.

The telescope is a cylindrical, glass vacuum tube with flat faces. Inside one face and parallel to it is a glass plate coated with a photosensitive coating of cesium-oxide silver. The other end of the tube is coated on the inside with a white material, usually willemite, which glows with a green color under the effects of electron impacts. Between the two faces of the tube is a series of ringlike electrodes and an aperture located concentrically about the axis of the tube; these electrodes are connected to a battery or other source of direct current.

An ordinary glass lens is used to focus the image of a scene upon the cesium surface at one end of the telescope. Thereupon, magically, the scene is reproduced on the screen at the other end of the tube, with a magnification which can be controlled by changing the voltages applied to the ring electrodes. The explanation is simple, if wonderful. The image on the cesium is transformed by the photoelectric effect into an electron image, *i.e.*, electrons are freed from the cesium in direct proportion to the strength of illumination at each point on its surface. The electrons are attracted, *en masse* and at high speed, from the cesium to the other end of the tube where, striking the fluorescent screen, they reproduce the image. Since the electrons are freed by almost any kind of light, it matters little whether visible or infrared light is used. Also, since the paths which the electrons take in their journeys down the length of the tube are controlled by the electrodes, they can be made to diverge or converge as they go, thus magnifying or reducing the resultant image at will.

(Concluded on page 46)

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The Institute publishes a variety of bulletins, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

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THE NEW ELECTRONICS

(Concluded from page 44)

Since infrared light penetrates haze and light fog to a much better degree than ordinary light, it has been suggested that the electron telescope might well become a part of the equipment of ships as a direct aid to navigation.

The control of the electrons in this device is indeed an achievement, for here we have no simple stream of electrons. It is a *picture* in electrons. All the subtleties of its arrangement and degrees of illumination must be preserved during the headlong flight down the tube or the picture becomes distorted, if not entirely lost. It must be remembered that all the electrons tend naturally to fly away from one another, since they are all charged negatively, and this anarchistic tendency must be curbed, albeit delicately, to transfer the image. The telescope is, therefore, a prime example of the ability of the electronic impresario to manage the show, even if he can only imagine what his actors look like.

NEW OBJECTIVES FOR TECHNOLOGY

(Continued from page 17)

immediately expand into the quarters vacated and there would be a reduction of pressure for space all along the line.

Fluid Research Fund. I have already expressed my judgment that the most important need of the Institute is at least \$200,000 a year annually, or a capital endowment of \$5,000,000, to provide a fund for research which may be allocated to the support of various important research projects or programs as they arise. The Rockefeller Fund of \$170,000 during the past six years has furnished on a limited scale a striking example of what can be accomplished with this type of assistance.

Summary. This entire program adds up to a capital expenditure of \$2,750,000 for buildings and equipment, and also an annual income of \$390,000 which, if also capitalized, would make the figure for the entire program \$12,500,000. The details are summarized in the following list:

EDUCATIONAL PROGRAM

| | | |
|----------------------------------------|----------|------------|
| Fluid Research Funds | annually | \$200,000 |
| Fellowships | annually | 60,000 |
| Biological Engineering, opera- | | |
| tions | annually | 80,000 |
| Biological Engineering, laboratory and | | |
| equipment | | \$ 750,000 |
| High-Voltage Program, laboratory and | | |
| equipment | | 340,000 |
| High-Voltage Program, opera- | | |
| tions | annually | 50,000 |
| Wind Tunnel | | 125,000 |
| Naval Towing Tank | | 35,000 |

STUDENT WELFARE

| | | |
|--------------------------------------|--|--------------|
| Dormitory for 100 men | | 500,000 |
| Gymnasium, or Extension to Walker | | |
| Memorial | | 1,000,000 |
| Total annually | | \$390,000 |
| Total capital | | \$2,750,000 |
| To capitalize the entire program . . | | \$12,500,000 |

Conclusion. Such, gentlemen, is the program of needs and opportunities which I present for your approval. The magnitude of the funds involved in the individual items is somewhat arbitrary, but in every case represents a conservative estimate of the amount which could advantageously be used. Barring what is best described as "an act of God," it is realized that a sum of this magnitude cannot be secured at once. It would seem to me unwise to attempt to achieve all these objectives by anything like a whirlwind drive. If we are to attempt them, however, it should be done vigorously and with expectation of success within a few years. I should therefore not advocate the organization of a whirlwind campaign to raise these funds within a specified date, but rather an organized, active, and sustained effort to secure them by bringing the program to the attention of Alumni and friends of the Institute and philanthropists who are interested in the objectives here set forth.

I hope therefore that this Corporation will express its general approval of the program and its authorization to the Executive Committee and President to take suitable steps in an effort to secure the facilities and funds required to meet the needs and opportunities that have been described. Such approval should also imply willingness of the Corporation, individually and collectively, to assist in such ways as may be proper and possible, for a program of this type can probably not be carried through successfully by the efforts of one individual or one small committee, but will require the enthusiastic and active support of the Corporation, Staff, Alumni, and friends of the Institute generally.

THE INSTITUTE GAZETTE

(Continued from page 26)

who also donated the money for the project, that he painted the murals in Walker Memorial, generously contributing his time for the panels on the south.

Dr. Williams was a Boston physician distinguished for his pioneer work in introducing x-rays into medical practice. A few months after Röntgen announced his epochal (and accidental) discovery in 1895, Dr. Williams made x-ray pictures in the Rogers Laboratory of Physics at the Institute and perceived their usefulness to physicians. Only a few more months elapsed before he had established an x-ray department at the Boston City Hospital, and less than a year before he had demonstrated the value of the Röntgen examination of the lungs and heart. He originated the clinical examination of the digestive tract by x-rays and in the field of treatment was credited with being the first to prove, in cancer of the lip, that the cancer could be alleviated by the Röntgen rays without the destruction of the surrounding tissue. As he pioneered in many other medical advances, he demonstrated the fruitfulness of carrying over into medicine the techniques of pure science.

His own successes as a scientist-physician probably led him, in making a bequest of nearly \$100,000 to Technology, to write: "I make this bequest for the promotion of pure science because I believe that pure and applied science should work together, since they not only assist but also stimulate each other." *(Concluded on page 48)*

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THE INSTITUTE GAZETTE

(Concluded from page 47)

It was Dr. Williams' Class that played the catalytic rôle in the organization of our Alumni Association, and Dr. Williams was on the first Executive Committee. He was the second alumnus elected to the Corporation (1882) and an original member of that body's Executive Committee, continuing until 1908 when, after 25 years of continuous service, he declined further election.

Professor Emeritus Bartlett, besides his long teaching career (1886 to 1929) in the Department of Mathematics, was Acting Secretary of the Institute for two years beginning in 1906, and at the time of his death was the representative of his Class on the Alumni Council.

Mr. Gilmore, long active in alumni affairs and Secretary of his Class, was President of the Alumni Association in 1923-1924 and a member of the Corporation from 1924 to 1929.

MAIL RETURNS

(Continued from page 4)

furnish electricity for various municipal purposes at little or no cost except in the residential rate for lighting. Freeport and Rockville Center, N. Y., are excellent examples of this as they each generate about 10 million kilowatt hours yearly and use about three million for municipal purposes such as street lighting for which little or no charge is made. Other municipal plants charge high residential rates and use the excess earnings to reduce taxes (an objectionable procedure from the standpoint of public policy). It is difficult to make corrections in the residential rates to allow for these conditions. If taxes are to be charged against such plants in order to prove their residential rates are relatively higher than those of privately owned plants, then we must in fairness permit them to charge for municipal services as a public utility would which would mean lower residential rates.

Any discussion of comparative rates which neglects to mention the asset to the community in the value of the municipal plant is misleading. Freeport and Rockville Center, N. Y., have plants whose fair value is probably at least \$1,000,000 in each case and which belong to the taxpayer, practically free and clear of debt, if allowance is made for cash on hand, and so on. . . .

The average rate in a municipal plant cannot be compared fairly with average rates of privately owned plants even in the same state, of the same size, or same average consumption per consumer. Local conditions determine costs. The use of coal or oil, steam or water, the extent of underground construction and monumental street lighting, the beauty of the power plant building, and other numerous variables have too important an effect to justify much faith in averages. Each

community has to determine how much beauty in better street lighting, more underground construction, and architecturally attractive power plant buildings are worth as compared with the usual non-descript type of construction by public utilities. These expenditures are bound to be reflected in rates. Each municipal plant is a local problem whose solution depends on local conditions, including the policy of the public utility serving the territory, and to which no general answer can be written by a study of average rates, interesting as that study may be. . . .

The argument that the public could not absorb municipal securities without raising the interest rate may be answered by pointing to the very great difficulties that trust funds now have in finding conservative investments. The coming of social security legislation means the accumulation of very large funds for which safe investments must be found. Public utilities usually carry as heavy a bonded indebtedness as possible, which they make, on the whole, little attempt to reduce in percentage of total investment. Municipalities, in general, are required by state laws to pay off in a reasonable period all bonds issued. There is little doubt that the average investor seeking sound bonds will prefer those of municipal lighting plants which grow safer every year. They are backed not only by the earning power of the plant but also by the taxing power of the community. The argument about increasing rates for the bonds of lighting plants was probably made years ago about those for water companies as they passed into municipal ownership, and yet the public seems to be willing to take all that are offered although the cost of additional water supplies for some of our cities is running into figures which rival the cost of the Panama Canal.

The preceding argument is not for or against municipal ownership but rather to show that the claim for no justification in increased municipal ownership of lighting plants is by no means sound. Unless private management can show better observance of its obligations as trustee for conflicting interests, municipal ownership is bound to increase. The disquieting thing about the entire discussion is that so many engineers who work for public utilities continue to argue that all is well although their influence should be thrown on the side of those who seek to correct existing abuses. The important social problems before us, of which public utilities are only one, demand the dispassionate approach for which engineers are supposed to have been trained.

Rebuttal

In refutation of Mr. Dexter's letter, the author has resolved his ideas into ten main points.

From MALCOLM G. DAVIS, '25:

1. The purpose of my article was to show the existence of competitive influences in the markets for electric utility services and to define and develop a quantitative measure of the over-all difference in cost to the taxpayer/consumer between commercial and public operation of electric utility systems. The past performance records offered the only sound bases of comparison. Only upon the basis of achieved results can reasonable conclusions be drawn as to future possibilities. Such an analysis called for the use of group averages, considered in relation to the inherent characteristics of electric rate structures and the relative homogeneity of the three consumer classifications included in the study. The use of averages to measure the obtained results in such homogeneous groups is entirely consistent with sound statistical practice.

(Concluded on page 50)

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MAIL RETURNS

(Concluded from page 48)

2. The analyses compared only the three major service categories directly affecting the general public. Revenues from other service groups are controlled largely by competitive conditions and, therefore, were not considered as being subject to change under a hypothetical shift from public to commercial management. The net calculated savings to the public, after giving effect to a shift of taxation from other sources to utility services, under the theoretical assumption of a change from public to commercial ownership, would be of the magnitude of \$6,765,000.

3. The statement that such a comparison is not sound because public operation renders street lighting and other municipal services without charge is not borne out by the facts. It is a matter of record that a proportionately greater share of publicly owned utility revenues comes from this source: 8.7% as compared with 4.7%.

4. While not considered in my original article, it can be shown by an analysis of the record that private operation has been more economical, as indicated by over-all operating ratios of 44.0%, compared with 55.0% for public operations.

5. Fuel efficiencies, taken as a measure of the general level of efficiencies under the two forms of operation, were 1.42 pounds per kilowatt hour for commercial systems and 2.46 pounds per kilowatt hour for public systems, based upon data in the Census of the Electrical Industry.

6. The effectiveness of state regulation and the efficiency of private management can best be indicated by the fact that the United States Bureau of Labor Statistics, in its index of residential electric costs, shows a continuous decline in rate levels amounting to more than 20% during the decade from 1926 to date.

7. The statement concerning errors in methods of accounting is nonfactual and can best be answered, from my personal experience as a former staff member of a state utility commission, by the categorical statement that the proportion of costs thus erroneously charged is negligible.

8. The statement that municipal plants have been increasing in number since 1929 is incorrect. The total number of municipal plants reached a maximum of 3,077 in 1923, from which point a continuous decline was recorded to a total of 1,849 in 1932. Since that time the number has again been on the increase; the start of this increase coincided in time with the advent of Federal grants and subsidies in aid of construction. The connection, and its possible ultimate effects, is obvious.

9. The question of excess earnings by municipal utility operations, and the concomitant reduction of general municipal taxes has been mentioned as an additional reason for invalidating my comparisons. Published studies, covering the relative conditions in Minnesota and Michigan, point to higher taxation levels in towns with municipal ownership.

10. Mr. Dexter, by reasoning from a single case, or a picked group of single cases, to the general condition concludes that the interconnected, regional utility system should be replaced by numerous small, efficient, and isolated plants. Given a favorable territory, the new, isolated plant can show lower costs than the regional system, which must serve both above average and below average territories. I contend that the best interests of the entire social and economic area must be considered and as such the regional system offers the only true solution.

It is not my intent to deny the possibilities of success with municipal operations under certain specific conditions. However, in considering the broad social aspects, based upon past achievements and upon the potential economic dangers of a wide extension of small-scale operation, it is my conclusion that private initiative can continue to serve the utility requirements of the nation more effectively and more economically than can any large group of individual municipalities. Likewise, the proved existence of effective competitive influences denies the necessity for "yardstick" plants with which to measure service costs, even if such plants should or could be operated, under political control, with all true costs included.

These statements cover only certain of the major points contained in Mr. Dexter's comments. I believe, however, that they indicate sufficiently the absence of factual bases for some of his statements.

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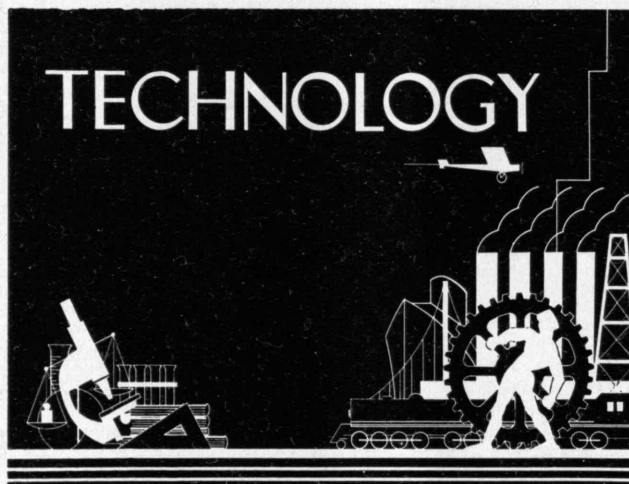
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S.P.E.E. Conventions

☐ Late in June the University of Wisconsin was host to the 44th annual convention of the Society for the Promotion of Engineering Education. Elsewhere in this issue (page 111) we have given an account of a luncheon of Technology men which took place during the convention. Here we make note that K. C. REYNOLDS '25 was elected secretary of the civil engineering division and HALE SUTHERLAND '10 was made a new director. Professor Sutherland, in outlining trends in structural engineering suggested: a year of graduate study after a year of practical work in the field for those aspiring to structural competency; vacations should all be spent in engineering work; undergraduates should be introduced to dynamic and earthquake designs. Papers were presented by: LANGDON PEARSE '01, on chemical treatment of sewage; R. G. TYLER '10 on technical developments in sanitary engineering; F. ALEXANDER MAGOUN '18 on non-engineering courses in the engineering curriculum; and T. R. CAMP '25 on a rational theory of clarification by sedimentation.

The fall meeting of the New England section of this society took place at the University of Vermont in Burlington, October 10. CARL S. ELL '11 of Northeastern University presided at the general session in the afternoon. At the morning conference in the mechanics division ROBERT W. VOSE '31 spoke on "Photoelasticity: 'Picture Book' and Research Tool."

At the spring meeting of the Eastern section of this group F. ALEXANDER MAGOUN '18 spoke at Schenectady, May 16, on "Helping the Young Engineer to Get a Job."

Before the Public

☐ CHARLES H. HEUSTIS '76 upon retiring from a long and active newspaper career in Philadelphia. Mr. Heustis started as space writer and became editor of the Philadelphia *Public Ledger*.

☐ DANIEL D. JACKSON '93, subject of a biographical sketch in *Industrial and Engineering Chemistry*, July 10.

☐ GEORGE OWEN '94 on appearing in the October *March of Time* football sequence.

☐ HENRY E. WARREN '94 as an example of "that new, adaptable type of New England business executive, as different from the captains of industry who preceded him as a streamlined airplane from a covered wagon."

☐ LOUIS S. MORSE '96 for delivering a paper, "The Development of 'Freon-12' Refrigerating Machinery," at the Seventh International Congress of Refrigeration at The Hague in June.

☐ FREDERICK C. GILBERT '98 and CARL J. TRAUERMAN '07 for reelection as secretary-treasurer and president, respectively, of the Mining Association of Montana. At the time of the election appreciation was expressed of the officers (especially these two) "who have contributed invaluable personal energy in making this association an institution of value to the mining industry of Montana."

☐ CARLETON ELLIS '00 as "the world's most prolific living patentee."

☐ CLYDE R. PLACE '02 as head of the Noise Abatement Committee of the First Avenue Association, N. Y. C.

☐ CHARLES J. BELDEN '09 for flying from Wyoming to the Newark, N. J., airport in a high-winged Ryan monoplane with young pronghorn antelope. Mr. Belden, in his 10-gallon hat, started with 23 antelope, left two at Lincoln Park Zoo in Chicago, three at the National Zoo in Washington, and a pair in Philadelphia; two more were to make the first antelope flight in a dirigible to Germany on the *Hindenburg*.

☐ NOAH W. GOKEY '17, SIDNEY E. DUDLEY '20, and JOHN H. ELLISON '34 on being appointed instructors in a new course in naval architecture at Temple University in Philadelphia.

☐ LOUIS H. SKIDMORE '23 upon being invited to assist in planning the New York exposition to be held in 1939.

☐ The late Professor WILLIAM T. SEDGWICK on representation in a *March of Time* program prepared after consultation with JAMES A. TOBEY '15 showing early pioneering in the growth and perfection of the dairy business, when "America's Pasteur" traced a typhoid epidemic to a contaminated milk supply.

☐ JOHN C. SLATER, Staff, for delivering an address at the Mark Hopkins centenary on October 10 at Williams College. Professor Slater was chosen to be present at this ceremony be-

cause he is considered "a master of the new physics who has built foundations for a mechanics of complex molecules, instilling new life into structural chemistry."

Penned

☐ By ARTHUR A. BLANCHARD '98, the late Professor J. W. PHELAN '94, and ARTHUR R. DAVIS, Staff, the fifth edition of "Synthetic Inorganic Chemistry," John Wiley and Sons.

☐ By CARLETON ELLIS '00, "Hydrogenation of Organic Substances," Van Nostrand Company.

☐ By BEN E. LINDSLY '05, an article, "A Bureau of Mines Study of a 'Bottom Hole' Sample from the Crescent Pool, Oklahoma," published in *The Petroleum Engineer*.

☐ By HENRY S. MEARS '06, an article on mining and milling costs, *Arizona Mining Journal*, September 15.

☐ By MAYO D. HERSEY '09, "Theory of Lubrication," John Wiley and Sons, Inc.

☐ By FRANK L. HITCHCOCK, Staff, and CLARK S. ROBINSON '09, "Differential Equations in Applied Chemistry," John Wiley and Sons, Inc.

☐ By STUART CHASE '10, "Rich Land, Poor Land," Whittlesey House.

☐ By BRADLEY JONES '10, "Elements of Practical Aerodynamics," John Wiley and Sons, Inc.

☐ By DOUGLAS C. MCMURTRIE '10, "A History of Printing in the United States," Volume II of a series of four to come out at six-month intervals, R. R. Bowker Company.

☐ By DEAN PEABODY, JR., '10, "Design of Reinforced Concrete Structures," John Wiley and Sons, Inc.

☐ By HALE SUTHERLAND '10, an article, "Making Structural Engineers in College," *Engineering News-Record*, September 10.

☐ By L. P. FERRIS '11, an article, "Effect of Electric Shock on the Heart," reprinted from *Electrical Engineering*, May.

☐ JAMES A. TOBEY '15, two articles: "The Legal Aspects of Milk Control," International Association of Milk Dealers; "Vitamin D Milks," published in *American Journal of Nursing*, Volume XXXVI, June.

☐ By V. J. TRUSHLEVICH '15, Professor of ore dressing at the Institute of Mines, Moscow, a comprehensive book on "Flotation."

¶ By EDGAR E. HUME '21, a new series of the *Index-Catalog* of the Library of the Surgeon General's office of the United States Army. Major Hume is librarian of this, the greatest medical library in the world, which "contains 394,003 volumes, 558,616 pamphlets — in all 952,619 volumes and pamphlets."

¶ By DAVID O. WOODBURY '21, a comedy, "Cousin Adelaide Is Psychic," presented this summer by Mary Young at Centerville, Mass.

¶ By M. E. HURST '22, a paper, "Recent Geological Studies in the Porcupine Area of Ontario," *Bulletin* of the Canadian Institute of Mining and Metallurgy, July.

¶ By GEORGE E. BARNES '23 and Fred L. Plummer, an article, "Hydraulic and Structural Work at Case School," *Engineering News-Record*, September 10.

¶ By WILLIAM BEARD '28, "Create the Wealth," W. W. Norton and Company, Inc.

¶ By ALLYN WHITE '35, an article, "Knowledge from the Deep," The Middlebury College *News Letter*, September.

Homage

¶ To the late J. WALDO SMITH '86, long chief engineer, Board of Water Supply, New York City, for whom a memorial tablet was unveiled on June 25 at the Ashokan Reservoir.

¶ To EDWIN S. WEBSTER '88 upon receiving the honorary degree of doctor of laws from Northeastern University, June 15.

¶ To WILLIAM R. KALES '92 upon receiving the honorary degree of doctor of laws from Wayne University, June 18. The conclusion to the citation stated: "Generous donor of time and skill in the solution of municipal and civic problems, he richly merits the gratitude of the city of his adoption [Detroit]."

¶ To KATHARINE BLUNT '03, President of Connecticut College, upon receiving the honorary degree of doctor of laws from Wesleyan University, Middletown, Conn., in June.

¶ To FRANK B. JEWETT '03 on receiving an honorary degree from Harvard University in June.

¶ To ANDREY A. POTTER '03, Dean of Engineering, Purdue University, upon receiving the honorary degree of doctor of science from Northeastern University, June 15.

¶ To CHARLES CAMSELL '09, Deputy Minister of Mines of Canada, upon receiving the honorary degree of doctor of laws from Manitoba University, May 13.

¶ To DONALD W. DOUGLAS '14 upon receiving the Collier Trophy for 1935, July 3. The citation read: "This airplane by reason of its high speed, economy, and quiet passenger comfort has been generally accepted by transport lines throughout the United States. Its merit has been further recognized by its adoption abroad, and its influence on foreign design is already apparent. In making this award recognition is given to the technical and production personnel of the Douglas organization."

¶ To EDWARD J. INGRAM '25 upon receiving the August D. Curtis Award for the Metropolitan Edison Company, of which he is lighting director, at the annual convention of the Edison Electric Institute in St. Louis. The award is given to the public utility which made the most outstanding achievement in the electric lighting of interiors and exteriors of commercial and public buildings during the year ending March 1.

¶ To KARL T. COMPTON, President, upon receiving the honorary degree of doctor of laws from Middlebury College, Middlebury, Vt., in June.

DEATHS

*See class notes for account.

¶ JAMES B. RUSSELL '70, June 8.

¶ WILLIAM F. DYER '73, July 19.

¶ GEORGE KIMBALL '73, August 8.

¶ FRANCIS WILLIAMS '73, June 22.

¶ GEORGE LANGDON '81, August 14.

¶ GEORGE G. SAVILLE '81, July 9.

¶ FRANCIS J. MOORS '85, July 30.

¶ DANA P. BARTLETT '86, September 9.

¶ SARAH L. DAY '87, June 11.

¶ THOMAS M. KELLOGG '87, July 8.

¶ STEPHEN CHILD '88, June 15.*

¶ EDWIN JORDAN '88, September 2.

¶ FREDERIC E. CALKINS '89, July 1.

¶ IRVING T. GUILD '89, September 10.*

¶ ROGER MORGAN '89, September 8.

¶ GEORGE W. ROUNDS '89, May 8.

¶ GEORGE L. GILMORE '90, September 12.

¶ ROBERT K. SNOW '90, July 13.

¶ CHARLES W. AIKEN '91, September 1.*

¶ ROSS L. MAHON '91, August 22.*

¶ EDWARD H. SHAW '91, August 31.

¶ LOGAN FELAND '92, July 17.

¶ FRED B. RICHARDSON '92, June 28.

¶ HARRY E. WEEKS '93, December.

¶ JOHN C. WOLFE '95, September 20.*

¶ ELWOOD SWEET '96, August 17.*

¶ ALEXANDER G. CALDWELL '97, August 24.

¶ PERCY G. STILES '97, July 5.*

¶ GEORGE W. CRAVEN '98, July 30.*

¶ FRANK B. HEATHMAN '98, April 3.

¶ HARRY C. INGALLS '98, July 11.

¶ ALICE M. BURR '99, June 12.

¶ J. HERBERT RICHARDSON '99, September 1.

¶ FREDERICK H. COOKE '00, August 28.*

¶ WALTER C. DEAN '00, August 16.

¶ MYRON P. POTTER '00, July 18.

¶ N. LORING DANFORTH '01, August 29.*

¶ THOMAS F. McDONNELL '02, April 16.*

¶ JOHN R. ODELL '02, October 1.

¶ ETHELBERG PARKER '02, August 2.

¶ CHARLES S. COLE '03, July 16.*

¶ EARLE OVINGTON '04, July 21.

¶ LEON SCHWARTZ '04, September 19.

¶ FREDERICK H. ANDREWS '05, August 5.

¶ THEODORE A. DISSEL '05, September 5.*

¶ WILLIAM F. EASTWOOD '06, August 10.

¶ MILTON T. LIGHTNER '06, February 26.

¶ ANTOINE G. LABBE '07, date not known.

¶ ELDRIDGE I. BAKER '08, September 20.

¶ F. HAVEN CLARK, JR., '12, July 12.*

¶ JAMES C. GOFF '13, December 24.

¶ LAURENCE B. HOYT '13, June 3.

¶ H. NELSON KEENE '17, July 2.*

¶ DONALD MACASKILL '18, August 26.

¶ ARTHUR R. HOLT '20, August 5.

¶ JOHN R. LESLIE '21, June 7.

¶ WILLARD H. RAY '21, May 15.

¶ LEWIS A. BOGGS '22, August 22.

¶ MALCOLM FISHER '22, March 15.

¶ STERLING THOMAS '22, July 26.

¶ HENRY H. BUCK '23, August 24.

Mr. Buck was an architect in the procurement division of the Treasury and assisted in designing the new Justice and Archives buildings in Washington, D. C.

¶ JOHN M. ERWIN '23, August 4.

¶ NORMAN A. TIMMERMAN '26, February 22.

¶ IRVING E. GRUNDY '27, June 15.

¶ IVAN R. WALLER '27, June 1.

¶ BORIS V. NAGASHEV '29, September 26.

¶ RICHARD BENNETT '31, August 5.

¶ LEO LICHTENSTEIN '35, October, 1935.

¶ ALBERT F. SCHAAD, former Staff member, June. Professor Schaad, at the time of his death, was in attendance at the electrical convention in Pasadena. He was a member of the staff of the University of Kansas and was at M.I.T. in the Physics Department in 1927-1928.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

S.P.E.E. Luncheon

Because many Technology men were present at a luncheon held on June 24 at the convention of the Society for the Promotion of Engineering Education held at the University of Wisconsin, Madison, Wis., a brief account follows: Dr. Dugald C. Jackson, Professor Emeritus, spoke in a most interesting and effective manner, easily holding everybody's interest to the end and provoking many questions which had to be cut short for the group as a whole, because of the unfortunate lack of time for those having responsibilities in carrying on the afternoon session of the convention. He spoke intimately of the industrial conditions in Japan, of the underlying social forces which were at work, of the difference in ethics to be expected from the Japanese, of their real industrial and technical progress, of their labor conditions, and of what all these matters meant to us as business neighbors and to Japan as a nation. His message carried a viewpoint which to me seemed quite vital to our understanding of the Japanese as a people and especially important in our contemplation of them as industrial competitors.

The attendance was very satisfactory: A hurried change to a larger room was necessary, and every seat at the table was filled. There were three ladies present, and if any mistake was made in arrangements, it was in the matter of not extending a direct invitation to all of the ladies in the announcement of the luncheon.

Among those present were: Harold W. Anderson '31, Edmund D. Ayres '22, Joseph W. Barker '16, Harold W. Bibber '20, Lloyd A. Bingham '27, Harry L. Bowman '14, John L. Bray '12, Allison Butts '13, Thomas R. Camp '25, Mrs. Thomas R. Camp, Hardy Cross '08, Paul A. Cushman '11, Roland P. Davis '06, Jesse J. Eames '02, Carl S. Ell '11, Joseph B. Finnegan '04, Herbert J. Gilkey '16, Ellsworth S. Gray '25, H. T. Heald, Dugald C. Jackson, former staff member, William V. Kaeser '32, L. Kahlenberg, Harold E. Koch '22, Samuel C. Lind '02, Israel H. Lovett '14, F. Alexander Magoun '18, F. A. Matka, James W. McNaul '21, William J. Miller '22, Melvin C. Molstad '23, Frank O. Nottingham, Jr., Herbert Parkinson '27, Henry B. Phillips, Staff, Mrs. H. B. Phillips '26, Henry A. Rahmel '33, Kenneth C. Reynolds '25, Mrs. K. C. Reynolds, Thorndike Saville '17, Bradley Stoughton '96, C. Hale Sutherland '10, George B. Thomas, Arthur L. Townsend '13, Gordon F. Tracy '26, Carlton E. Tucker '18, Richard G. Tyler '10, Royal L. Wales '02, Clifford M. Wallis '29, Graham Walton '30, James H.

Walton '99, Harry D. Wolfe '23, Robert R. Worsencroft '21. — EDMUND D. AYRES '22, 211 Engineering Building, University of Wisconsin, Madison, Wis.

M.I.T. Association of Buffalo

A summer outing of the Buffalo and Niagara Falls Alumni was held at Edgewater Park, Grand Island, on August 15. Eighty Alumni and families gathered early in the afternoon to see an excellent game of soft ball won by a team captained by Robert MacMullin '19. Edward Morris '33 and William Leach '16 won the baseball hitting contest while Marvin Gorham, Jr., '36 won the 100-yard dash and the baseball throw. The bridge prize for the ladies was under dispute and the winner was never determined.

When the attendance was taken at dinner it was found that the Niagara Falls Alumni outnumbered the Buffalo Alumni more than two to one. For this remarkable turnout, the Niagara Falls committee was given three rousing cheers by the Buffalo Alumni. After dinner Marvin Gorham '93 acted as toastmaster and spoke for the Buffalo Alumni. Harry Noyes '90 spoke for the Niagara Falls Alumni and was interrupted several times by S. B. Eagan '06, until the entire assembly left to seek relief from the rising temperature of the air.

The committee was Carl J. Bernhardt '28, chairman; Raymond R. Ridgway '20, William B. Leach '16, and Calvin H. Mohr '33. — CALVIN H. MOHR '33, Secretary, 1224 Cayuga Drive, Niagara Falls, N. Y.

New Haven County Technology Club

On Saturday, June 27, the annual Old Lyme outing was held at the Boxwood Manor and was one of the finest meetings that has ever been held. The Technology Club of Bridgeport was invited this year, so that it was really a joint meeting of Hartford, Bridgeport, and New Haven. The attendance was extremely good. We played hard and soft baseball in the morning, tennis and golf after dinner.

The following officers have just been elected by the Club for the coming year: Earl L. Krall '30, President; Albert S. Redway '23, Vice-President; Earl A. Greenleaf '18, Secretary; William G. Hodges '22, Treasurer; T. C. Merriman '09, Governor-at-large. — EARL A. GREENLEAF '18, Secretary, 106 York Square, New Haven, Conn.

M.I.T. Club of Northern New Jersey

On May 27 a bridge team representing the Club played host to a team from the Technology Club of New York on the oc-

casional of the second duplicate bridge tournament for the trophy presented jointly by the two clubs, which was won by the New Jersey team at the initial contest last year. The New Yorkers journeyed to what Tubby Rogers, Staff, calls our "tank town" of Newark where Art Lunn '07 provided facilities for the contest and for refreshments at the Newark Athletic Club. As in the case of last year's battle, the invaders immediately got the range of the defenders' armaments and eventually triumphed, but this time Al Glassett '20 and his "Skyscrapers" took the trophy across the river away from the valiant band of "Skeeters" under Ed Thimme '23. The Thimmemen threaten a fierce drive to regain the cup in the annual classic this year.

At a meeting of the governing board on September 15, President Mac McNeill '17 announced that a regional scholarship has been established for the Club's district for 1937. The scholarship committee has been enlarged and key men are being appointed to maintain contact with all the secondary schools in the Club's territory.

Monthly luncheons were resumed in October and it is planned to continue them until May. They are held the second Thursday of each month at the Newark Athletic Club; the next luncheon is to be held on November 12. There are no set programs or formalities and all Technology Alumni are invited to attend at any time between the hours of noon and 2 p.m. — CAROLE A. CLARKE '21, Secretary, 10 University Avenue, Chatham, N. J. FREEMAN B. HUDSON '34, Assistant Secretary, 105 Hudson Street, Jersey City, N. J.

Rocky Mountain Technology Club

A joint meeting of the Club and the Rocky Mountain Club, the student society at Technology composed of members from this territory, was held at Meadow Park at Lyons, Colo., June 27. Present also were prospective students at Technology and guests.

To start this picnic as all picnics should be started, a game of soft ball was organized. The old graduates played the youths and in about four innings showed them a thing or two about baseball, trimming them to the tune of 40 to nine. Harold Bosworth '02 was umpire and Dr. A. J. O. Löf, the interested spectator. Ben Howe '26, whose cherubic countenance was haloed by last season's straw skimmer, was voted a prize for having on the most appropriate baseball costume. When the score got as high as the umpire could count, the diamond was forsaken for the shady grove in the bend of the beautiful St. Vrain River, where a keg packed in ice was waiting. Blowing foam and a game of horseshoes entertained for

a while. Then everyone pitched in and before long soup was on, hamburgers were sizzling, and there was spread upon the tables a variety of sandwiches, pickles and so on — more than sufficient to meet the demands of ravenous appetites. There were ice cream and coffee to top off the supper.

Later arrivals included Fred Floyd, and Dana Kepner '21 and his brother, H. R. Kepner '20, the latter having recently come from Utah on a visit. To the accompaniment of the piano accordion of Bernard Riddell '38, Tech songs were sung with such exquisite harmony that it was a shame that such good melody issued from this isolated spot in the foothills of the Rocky Mountains and not from some more populous spot where crowds could enjoy it. Many had to leave early, but a number stayed to receive a lesson in poker from Ben Howe, who did not seem to be handicapped at all by the glare of the gasoline lamps or the inquisitiveness of numerous insects which were as enthusiastic as the invited members who attended this picnic.

Thanks were rendered to the hard-working committee composed of Harold Bosworth '02 (chairman), Duane Wood '37, and Ben Howe '26. Harold Bosworth officiated in spite of the fact that this day was the 30th anniversary of his wedding. He was given much good advice on how to square things with Mrs. Bosworth, so undoubtedly he was able to do so.

In addition to those whose names have been mentioned, there were present: Bob Blunt '38, Walter Hudson '39, George Löf, G., G. L. Garwood, Douglas R. Waterman '23, Thomas Marker, Arthur L. Hill '23, Alfred W. Garnell '33, R. H. Fox '12, Julius Orpen, and David Whitaker '37. — LINCOLN REID '29, *Secretary*, United States Reclamation Bureau, New Custom House, Denver, Colo.

Technology Club of Southern California

A dinner meeting of the Club was held on Tuesday, August 11, at the University Club in Los Angeles. The speaker was Arthur C. Ruge '33, research associate in seismology at M.I.T., his subject being earthquakes. As this is a subject of universal interest, the University Club was invited to join with us and make it a joint affair, which they were glad to do. As earthquakes are no respecters of sex and affect men and women alike, the ladies were also invited and we were delighted to have quite a number of them present. The total attendance was about 125, being about equally divided between M.I.T. Alumni and their ladies and University Club members and their female companions.

Mr. VanSant, a director of the University Club, introduced K. C. Kingsley '23, as president of the Technology Club of Southern California. As there was no business to come before the meeting, Mr. Kingsley immediately introduced Mr. Ruge, who proceeded to give a very interesting illustrated talk dealing mainly with the research work which he has

been conducting at M.I.T. on the behavior of elevated tanks during an earthquake. He explained how earthquakes are reproduced on a shaking table and the method by which the models are tested. His talk, while it dealt with a highly technical subject, was presented in such a way that it could be understood by any layman present.

The University Club was also the scene of the Club's previous dinner meeting on June 23 when the guest of honor was Dr. Vannevar Bush '16, Vice-President and Dean of Engineering of M.I.T. The meeting was called to order by President Breyer '10, and after all present had arisen and introduced themselves, it was found that there were present 64 members, two visiting alumni from other universities, and the guest of honor.

President Breyer then announced that nominations were open for officers to serve for the coming year. It was announced that the steam roller was well oiled and had a full head of steam, and that he did not wish to hear any dissenting voices against the ticket which had been lined up by the politicians. The ticket he announced was as follows: President, K. C. Kingsley '23; Vice-President, William H. Robinson, Jr., '24; Secretary-Treasurer, Charles H. Toll, Jr., '23. — David M. Hughes '15 then moved that the nominations be closed, which motion was seconded by someone unknown to your Secretary. The motion was carried unanimously.

Mr. Kingsley, the new President, then presented his platform in which he promised that regular monthly meetings would be held commencing with August, at every one of which an interesting program would be presented by some outstanding Technology alumnus. — He then introduced Mr. Robinson as the chairman of the evening, who, with a few words of praise, introduced Dr. Bush. The latter thereupon proceeded to give a very interesting talk on the activities of the Institute, following which numerous questions were asked and answered. — CHARLES H. TOLL, JR., '23, *Secretary*, Box 1120 Arcade Station, Los Angeles, Calif.

Technology Club of Virginia

The Club managed to function during the past few months, despite the heat and vacations. The regular luncheon meetings were held at the Westmoreland Club in Richmond on the last Monday of each month. These meetings will be continued during the coming season. It is hoped that more Technology men will avail themselves of this opportunity to meet and become acquainted with fellow Alumni. Visiting Alumni are invited to attend these meetings.

With the coming of the fall and winter seasons, plans will soon be formulated for the annual meeting of the whole state group. In the meantime, Alumni in the Newport News and the Norfolk areas are asked to communicate with Don Holden '31, care of Newport News Shipbuilding and Dry Dock Company, or M. W. Kennedy '33, care of Virginia Electric

and Power Company, Norfolk, to aid them in organizing local clubs in these areas.

Since the revival of the Technology Club of Virginia about a year ago, I believe that enough has been offered to satisfy everyone that such a club can be a worth-while organization in this state. With additional support from the Alumni in the state, it is hoped that the coming year will see a real, vigorous Alumni Association functioning in Virginia. Get in touch with us. We are always glad to hear from you. — JOHN J. FAHEY '29, *Secretary*, Virginia Electric and Power Company, Richmond, Va.

M.I.T. Club of Western Pennsylvania

On May 28, the Club held its last regular meeting of the year at the University Club with Professor B. Alden Thresher '20, Technology's newly appointed Director of Admissions, as our guest speaker. In his talk on "New Developments at the Institute," Professor Thresher stressed three points in the program of the Admissions Department: stabilization of enrollment, scholarships, and the liberalization of admission requirements.

The following officers were elected for the coming year: President, E. A. Holbrook '04; Vice-President, Samuel J. Helfman '24; Treasurer, Elbridge J. Casselman '15; Secretary, Charles M. Boardman '25; Assistant Secretary for membership, Warren D. Smith '27; Assistant Secretary for publicity, Joseph L. Thistle '32; Arrangements Chairman, David P. Moore '28; Executive Committee: Kenneth Seaver '00, Francis C. Foote '16, and Everett A. Soars '21.

On July 8, as guests of Lieutenant Colonel Covell '23, 33 members of the Club enjoyed a trip on the United States Engineers' boat to inspect the construction and dredging operations at the Emsworth Dam in the Ohio River several miles below Pittsburgh. An exciting incident of our departure was the late arrival of C. N. Palmer '92, who came rushing down the wharf just as we were pulling out to midstream. However, by means of a convenient rowboat he quickly joined us. After a very pleasant trip lasting about an hour and a half we arrived at the dam where we were taken in charge by Lieutenant W. E. Potter '33, who showed and explained to us the construction and operation of the new dam and locks. On the return trip to Pittsburgh we enjoyed a splendid dinner, served in the dining saloon, followed by a most interesting exhibit of moving pictures showing the March flood. Nine hundred and thirty feet of flood pictures, taken from vantage points attainable only by a United States Engineer presented a remarkable account of the devastation wrought by the three Pittsburgh rivers.

During the national convention of the American Chemical Society, an M.I.T. luncheon was held on September 11 at the University Club, attended by about 30 of the visiting alumni chemists and local club members. — CHARLES M. BOARD-

MAN '25, *Secretary*, Duquesne Light Company, 435 Sixth Avenue, Pittsburgh, Pa. JOSEPH L. THISTLE '32, *Assistant Secretary*, Burrell Technical Supply Company, 1936 Fifth Avenue, Pittsburgh, Pa.

Worcester County Alumni Association of M.I.T.

The annual meeting of the Club was held on July 9 at "Allenacres," the home of Charles Allen '07 in Spencer. The day being very hot, the enthusiasm of a number of the Alumni for participating in the sports was somewhat dampened, although the usual keg on third base was used as an incentive. The sports and the clambake were rudely interrupted by a terrific wind and rain storm which scattered the crowd in all directions.

Finally assembled in Charlie Allen's garage, the group enjoyed a good dinner and speeches by our old friends, Charlie Locke '96 and Donald Robbins '07, who gave a good account of the activities of the Institute, particularly regarding the undergraduate body and the dinghy fleet. Everyone enjoyed the hospitality of Charlie Allen at his splendid new home.

The following officers were elected for the coming year: President, E. A. Tee-son '15 of Southbridge; Vice-President, A. B. Sherman '06 of Fitchburg; Secretary-Treasurer, John A. Swift '27 of Worcester.

The following members were present: Worcester — E. G. Betts '18, L. L. Brega '27, Gordon W. Browne '29, Percy J. Colvin '07, Fred H. Daniels '11, Lewis Davis '12, Orville B. Denison '11, D. P. Dyer, Jr., '32, Sidney F. Eliot '27, James Edward Fuller '88, Robert L. Fuller '96, James H. Fuller (son of R. L.), Ralph F. Gow '25, Robert N. C. Hessel '27, Albert S. Heywood '92, Forrest F. Lange '23, Harry M. Latham '93, George D. Manter '31, Norman C. Nelson '30, Leonard C. Peskin '29, J. Weston Pratt '24, Harold L. Robinson '11, John A. Swift '27, John L. Tufts '99, A. A. Thomas '36, Louis E. Vaughan '02, Lewis S. Vose '16, Ernest P. Whitehead '20; Brookfield — W. H. Hadley '32, R. S. Rowlett '16; Fitchburg — C. E. Cashman, Jr., '33, W. S. Crowell '32, Frederick N. Dillon '93, Russell B. Lowe '02, A. B. Sherman '06; Gardner — H. O. Berry '22, S. H. Hartshorn '11, L. P. Jandris '30, Thomas P. Kelly '18, Harry S. Kendall '04; Leicester — George J. Burke '29; Leominster — H. L. Hayden '23, R. J. Proctor '28; Shrewsbury — Edgar W. Norton '98; Southbridge — R. P. Brown '31, John S. Middleton '29, E. A. Tee-son '15, C. H. Wilson '34, C. S. Woodruff '31; Spencer — Charles E. Allen '07, E. H. Squire '07; Sterling — Ralph G. Mahony '18; Whitinsville — F. E. Banfield '07, P. B. Walker '07. — JOHN A. SWIFT '27, *Secretary*, 15 Stoneland Road, Worcester, Mass.

CLASS NOTES

1873

The 66th meeting of the Class Association was held at the Institute, Cambridge, Mass., on Monday, June 8 —

Alumni Day. Cogswell and Tompson were present. Letters were received from Borden, Leman, Carpenter, Kimball, and Brotherton.

Word has been received of the following deaths: Frederick Guild, who died on February 1; Dr. Francis H. Williams, whose death occurred on June 22; and George H. Kimball, who passed away on August 8. — GEORGE M. TOMPSON, *Secretary*, 8 Whittemore Terrace, Wakefield, Mass.

1875

The 54th class meeting of '75 met at the Engineers Club, Boston, on May 26 at one o'clock. Present were E. S. Dorr, G. H. Eddy, Thomas Hibbard, and C. A. Simpson. The party gave Simpson a hearty greeting on his first appearance at any of the class assemblies. After a sumptuous lunch, such as our hosts always serve, President Hibbard called for order to transact the usual routine business. The Secretary's records of the last meeting were read and approved. Then followed the Treasurer's report as audited by Eddy. This was also approved.

The Secretary read a report of the present members. According to the alumni records there are 36, of which only 17 addresses are known. Of the notices of the meeting sent out, ten replies were received, five accepting. The Secretary then read the replies of those unable to be present, expressing their regrets and sending greetings. The President announced the name of the only member who has died since the last meeting — William C. Richardson, whom we lost last October.

At the request of the President, the question of the Secretary's salary was brought up, it appearing that due to decreasing membership the Secretary's work became ever lighter. After some discussion the question was put and the unanimous vote was that there should be no change in the Secretary's salary at present.

A very pleasant hour or so of conversation followed, during which Simpson told of compiling and copyrighting his 2,000-year calendar showing the day of the week on which any date fell for the last 2,000 years. He presented a copy to each of those present. — As Eddy and Simpson had to leave for their trains, the meeting adjourned at half past three. — THOMAS HIBBARD, *Secretary*, 4 Ridge Road, Milton, Mass.

1877

Nine members of the Class were present at the Exchange Club in Boston on June 8. Those present were, as they sat at the table: Charles A. Clarke, Joseph P. Gray, William H. Beeching, George F. Quinby, Frank I. Sherman, Edward W. Davis, B. C. Mudge, Arthur L. Plimpton, and B. T. Williston. Of 28 living members, all but eight sent replies. As there were a number of the Class not able to attend our 59th reunion, I feel it would be well to print some of the replies. Our meeting was a very enjoyable affair, lasting to about 3 P.M.

The following letter from Francis H. Bacon of Chanakkale, Turkey, was dated May 12: "Yours of April 15 with Mexican inclosures and your fine account of your trip is received. I enjoyed your account immensely. You described just what one wanted to hear, no frills, and here I followed you and your party and enjoyed it with you. Bravo, 'old' Cranberry, do it again. I can imagine how your friends gather around to see your movies. What a wonderful land that must be and now you can go to a library and read up about what the modern archaeologists have discovered about Mexico! I don't suppose you noticed the little island of San Juan de Ullua, the old part of Vera Cruz. Interesting things happened there in 1568. I have always been interested in old voyages and travels. I had three editions of Hakluyt, reprints of course (there is an original edition in the Carter Brown library at Providence), but when I came across the entire Hakluyt in 8 small volumes of Everyman's library, I gave away all the others! I advise you to get those 8 volumes to read sometimes on winter evenings when you get tired of the usual books. Look at Volume 6 with the account of the two poor devils set ashore after a fight with the Spanish ships at San Juan de Ullua (p. 296). Sir John Hawkins tells of going to Africa to capture a lot of negroes for slaves; then to Cuba and Mexico to sell them; then the Spaniards — Francis Drake was there too — beat them out of St. Juan — not food enough on board — so a lot of the men were set ashore and finally some of them were carried to Mexico City and tried as heretics. Some of them burned at stake. But you read about what happened to Miles Philips and Job Hortop and think of your automobile and the lunches put up by the Hotel Geneve! . . .

"By the way, my eldest grandson — 24 — is to be married next month. A fine lad and he bears my name. — I'm not going to write you any more stuff to publish: I overdid it recently. Sent a wad to a friend of the Boston Society of Architects and found he had been dead two years. What do you think of that? — Charles Coolidge, the account of whose life you sent, was a close friend. I had just written him shortly before his death. We were draughtsmen together in Richardson's office before I dropped architecture and went to Davenport's.

"My best regards to Kittredge, Hibbard, and all the fellows on June 8. I hope Plimp will be there as well as Clarke. — Goodbye, Bartol! I've been saying that to a number of friends recently, . . . but 'cheerio' is the word.

"Now for the beans and potatoes. Good luck to the cast-iron '77 Secretary. . . ."

Harry C. Southworth sent the following message from his home in West Stoughton, Mass.: "Greetings to my classmates of '77. — Last year passed without the usual letter. Now I will try to make amends. I am sorry to be obliged to miss the meetings, which have always been so enjoyable.

1877 *Continued*

"I seem to continue in about the same physical condition, fortunate in most ways but lacking the power of locomotion. In other words, carburetor good but running gear poor. — I note the passing of J. W. Rollins of '78. Nothing was said about his connection with railroad and grade-crossing elimination. I came to know him quite well while serving as commissioner on the work from Boston to Dedham via Readville, and also at Brockton. How much he had to do with the planning I do not know, but he called my attention to the flat arched bridges he designed as being more economical to build and providing more sidewalk room.

"In connection with my mine work, I think I have never mentioned a job that was probably unique. To check up a survey between the Pewabic and the Quincy mines made to determine the boundary at a point 1,500 feet below the surface, we had a diamond drill hole bored on a slant so that a tape line could be run through. The drill hole was about 30 feet long and less than two inches in diameter. Our equipment was two Gurley transits with extension tripods and an experienced man at each instrument. I was stationed in the Quincy mine and Mr. Emerson in the Pewabic. We sighted through the hole and measured the distance, repeating angles and reversing dips. Results were very satisfactory. We did all kinds of work from the most careful accurate work to rough forest work. . . . I will add that my work in surveying was a very small part of my work. I had chemical work and all sorts of problems to solve.

"I will close with regards to all and thanks for the consideration and good wishes of my classmates."

E. G. Taber wrote your Secretary as follows from Spokane, Wash.: "I am genuinely sorry that I cannot accept the invitation from Mr. Clarke to attend the class luncheon and renew acquaintances of so long ago, but the time necessary to make the trip is more than I can give to other than the obligations which I have assumed out here. — I have very little to report that would be of interest, because my time has been taken up with work of a very ordinary, standardized character, and all I could talk about would be personal experiences of more or less 'story-telling' value. But I send my best wishes to you and all my classmates who may be with you on June 8 or whom you may meet at other times."

Wallace Hackett, another absentee, penned the following: "Your call for a greeting gave me cause to think. I hastily ran over the amazing changes that have occurred in our time, which may be better appreciated by recalling conditions of the past. In my early days, railroads were comparatively newcomers and memories of the stagecoach were still strong. Many of the local employees of the railroad were ex-stage drivers with the straw still clinging to them. The attraction on a pleasant Sunday afternoon was to go to the roundhouse and view with awe the locomotives, most of which were wood

burners with stacks like a balloon. — Trains made the run to Boston in two-and-a-half hours, a distance of 50-odd miles. Speed in excess of 20 miles an hour was regarded with disfavor. There was a sharp grade near the town which reduced the speed and caused the engine to puff stentorially. One of the early jokes was for a brakeman to come in at the fore door with an air of importance and say: 'Now all lean forward and help the engine up the grade.' Many of the passengers would obligingly do so.

"Wood was the universal fuel. Pennsylvania coal was just beginning to appear. It was regarded with some suspicion — coal gas you know. Plumbing was unknown, yet they managed somehow to get along without it. It was the custom of the leading citizens after four o'clock in the afternoon when the banks closed to gather at the Athenaeum (1817 and still going) and there to discuss local affairs. Water had recently been introduced by means of wooden logs and the subject of bathtubs was under discussion. The weight of sentiment was averse to that innovation. An opinion on that subject was asked of Judge Levi Woodbury. (He was our great man! President of the Senate when Washington was inaugurated, Secretary of the Treasury, Judge of the Supreme Court, among other things.) The Judge was not accustomed to commit himself rashly, so he said: 'Well, I don't know. My son Charles took a bath all over once and it didn't seem to hurt him any.'

"The son Charles was the late Charles Levi Woodbury of pleasant memory, for many years a prominent lawyer of Boston. He always wore a tall silk hat with a straight brim — the only one of its like in existence — and his genial presence was very much appreciated in the vicinity of State Street, much as was that of Daniel Webster at an earlier period.

"Contrast the suggestions indicated above with others that will readily occur and compare them with those of today when transportation to California is a matter of hours, when electricity has performed marvels in many fields, and other agencies of development and progress have changed affairs which touch us all, and it will need no persuasion to convince us that we have lived in marvelous times."

Several months prior to receiving the above letter, your Secretary was in receipt of another communication from Hackett to which he will refer in a later issue. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1882

The 54th annual reunion of the Class was held on the evening of June 10 at the University Club, Boston, Mass. Dr. French, who lives at the Club, kindly gave the use of his quarters for a meeting place; he also arranged for a dainty dinner in a small dining room befitting the occasion. Those attending the reunion were: Dr. French, Henry Ross, Fred Gooding, Alfred Darrow, Miss Rachel Snow, and Miss Grace Phillips.

A number of letters from absent members were read by our Assistant Secretary. One of these from Mrs. S. P. Clark (Carrie Louise Rice) was very interesting. For a year she has been under the care of an oculist. She is studying the Braille system and hopes to be able to read again soon. With the present condition of her eyes she cannot read at all. Her classmates send her cordial greetings and the hope for a speedy and complete recovery of her eyesight.

After dinner the time passed pleasantly under the tactful guidance of Rachel Snow who told us of her intended trip by automobile out through the West, with three high school girls for companions. — ALFRED L. DARROW, *Secretary*, 39 Garrison Road, Brookline, Mass. RACHEL P. SNOW, *Assistant Secretary*, Pin Oakway, Falmouth, Mass.

1883

George Underwood reports in the "fifty years ago" series: "In 1886 I was listed in the M.I.T. catalogue as industrial chemistry assistant and in 1887 as instructor. At the head of the department, which was started in the fall of 1884, was Dr. L. M. Norton. The laboratory was in a room in the basement of Walker Building. My job was to prepare samples and lantern slides and exhibit them at Dr. Norton's lectures; also to oversee the laboratory work of the students. I remained in that position until the summer of 1888 when I began work as superintendent of a glue factory of which our classmate, King Upton, was managing trustee. I stayed with this company and its successor, the American Glue Company, in various positions until 1930 when the company was liquidated."

Charles A. Coolidge, who took a special course in architecture with the Class, had been graduated from Harvard in 1881. He died in April this year after a most notable career as one of the foremost architects of this country. Among the buildings Mr. Coolidge designed were those of Stanford University in California, New York Hospital, Cornell Medical School, the new structures of the Rockefeller Institute in New York, the medical school and hospital group of Vanderbilt University at Nashville, the medical school of Western Reserve University in Cleveland, and the medical school and hospital of the University of Chicago. For Harvard he designed the new law school, the medical school, the freshman dormitories, the Collis P. Huntington Memorial hospital, the various units of the House plan, the new buildings in Harvard Yard, and the Fogg Art Museum. In Boston, Mr. Coolidge designed the Southern Terminal Station, the Ames Building, and buildings for Massachusetts General and other hospitals. In 1906 Harvard made him an honorary doctor of arts. He was the first recipient of this degree, of which there has been only one other holder: the late John Singer Sargent, the artist. Mr. Coolidge, when an undergraduate, was one of the original members of the editorial board which founded the Harvard

1883 Continued

Lamoon, said to be the first comic periodical successfully produced by any college.

A class reunion planned for a week in August at Chocorua Lake in New Hampshire finally resulted in attendance by Horace Gale, with handicap of one, and wife with no handicap, together with the Secretary, handicap of three, and wife, no handicap, at the Ferncroft Camps in Wonalancet for a fortnight with golf, swimming, and mountain climbing as daily features. — HARVEY S. CHASE, *Secretary*, Bridge Street, South Hamilton, Mass.

1887

The annual class dinner was held on June 7 at the Parker House, Boston, as usual, with 13 attending. One of the high spots of the occasion was the presence of Henry F. Hill of Augusta, Maine, whom we had not had the pleasure of meeting for 42 years. He admits that this is too long an absence, and has made a firm resolution not to miss any further dinners or reunions.

Cards and letters of regret were read by Winthrop Cole from some 35 classmates, while the following were present in person: Barton, Blake, Brainerd, Cameron, Carter, Cole, Goss, Hill, Lane, Taintor, W. R. Thomas, Tripp, and Very. Discussion centered principally on our 50th reunion which occurs next year, and it was considered best to hold it somewhere in the near vicinity of Boston. It was also decided to start making arrangements as soon as possible.

George Draper, who was greatly missed at the dinner, writes from San Pedro, Calif., as follows: "Certainly sorry to miss the dinner, but glad you got the usual number present. Am off to Nevada fishing soon, and go to Alaska later; am trying out the Townsend plan of putting money in circulation while idling; there are 22 electric roulette games going openly within 30 miles, to my own personal knowledge; a blonde is \$5,000 ahead at the one I shall visit this afternoon to study the deplorable degradation of the human race."

George Sylvester writes from Rockwood, Tenn.: "I was glad to see the familiar names, including your own, on my invitation to the class dinner. While I am too far away to attend, thought I would drop you a line and ask you to give my regards and best wishes to those present, and to say that I still have some very happy memories of the few times that I have been privileged to have been with you in the past on these occasions. It might interest you to know that I have been in attendance as a member of an M.I.T. alumni club of some 35 or more members, which has been recently formed at Knoxville, Tenn., about 50 miles from my home, and while '87 dated way back of any present, I still enjoyed the fellowship and M.I.T. atmosphere of these meetings."

Two of our classmates have passed on since the last issue of *The Review*. Miss Sarah Louise Day on June 11 at York Cliffs, Maine, and Stephen E. Coombs on

May 22 at the Flower Hospital in New York City. The Secretary is indebted to our classmate W. C. Cushing for the following sketch of Coombs's career, which appeared in the *New York Times* of May 24: "Stephen Elbridge Coombs, who retired last year as special engineer for the land and tax department of the New York Central Railroad, died yesterday at the Flower Fifth Avenue Hospital. He was 70 years of age and lived at 65 Elliott Avenue, Yonkers.

"Mr. Coombs was a civil and construction engineer by calling. After his graduation from M.I.T. in 1887 he became associated here with the late Colonel George Waring, sanitary engineer. Then until 1900 he was an assistant engineer in Missouri for the Burlington Line. This service was followed in 1901-1902 by the post of chief engineer for the Southern Missouri and Arkansas Railroad, for which he built a line from St. Louis to Poplar Bluff, Mo. In 1903 he joined the New York Central, remaining with it until his retirement last year. He served the road for two years as chief draftsman and then he became an assistant engineer, holding the position until 1910, when he was made assistant to the construction engineer. In 1914 he was appointed an assistant to the valuation engineer; in 1916, special engineer to the chief engineer, and in 1926, the office which he filled at his retirement.

"Mr. Coombs was a member of the American Society of Civil Engineers, American Railway Engineering Association, the Masons, and the Railroad Young Men's Christian Association. He was born in Brunswick, Maine, a descendant of a long line of New England sea captains, a tradition borne out by his father, the late Davis E. Coombs. His mother was the late Mrs. Anna Maria Lee Coombs. His ancestors settled in New England in the 17th Century and fought in the early American wars.

"His wife, Dr. Irene Copeland Coombs, a physician, died two years ago. Survivors are: a daughter, Dr. Helen Copeland Coombs of Yonkers, assistant professor of physiology and biochemistry at New York Homeopathic Medical College of Flower Fifth Avenue Hospital; a brother, Dr. George H. Coombs, director of the Maine State Department of Public Health; a sister, Miss Jeannette Coombs, of West Bowdoin, Maine." — NATHANIEL T. VERY, *Secretary*, 1 Hamilton Street, Salem, Mass.

1888

As promised in our July notes we now give you the names of the classmates who were present at the eighth Ned Webster dinner (not seventh as incorrectly stated in July) held on June 6, as follows: Bates, Besler, Bridges, Buttolph, Cheney, Collins, Eastman, Ellis, Faunce, Ferguson, Fuller, Hamblet, Holman, Horn, Lee, Mead, Reynolds, Runkle, Sawyer, Sjöström, Smith, Stone, Thompson, Webster, Williams, Wood — 26 in all and seven more than last year when we had only 19, an increase of 37%! If this rate of increase should continue until our 50th anniversary

in 1938, we will have 50 '88 men present or 65% of our number of graduates half a century ago.

Ever since Ned Webster started to give us our class dinners in 1929, W. G. Besler has had a directors' meeting interfere with his coming, but this time there was no interference and we are sure that he found our previous reports were not exaggerated. He now knows what he has been missing.

Louie Ferguson certainly was an added feature of the dinner, coming as he did for the first time, all the way from Chicago especially for the event. Not one of his classmates knew him as he strolled down Ned's main garden path, a portly gentleman with white hair and mustache, dressed in the height of fashion, compared with the slender young man of "strawberry-blond" complexion whom we knew in 1888. But when he smiled it was the same old smile and we recognized him instantly. Ferguson passed around a fine collection of photographs of Mrs. Ferguson and their children and grandchildren. We all hope that now he has got started he will come again and especially will not miss our "grand 50th" in 1938.

This also was the first appearance in many years of Georgie Holman who came up from Hartford, Uly, as his most intimate friends call him, is the same "hail fellow well met" that he always was. Since the dinner he writes me that he has gone over the "Five-Year Catalog" of March, 1935, and finds that 102 '88 men are noted as having died; 178, among the living, or a total of 280 names listed. Subtracting from this the 193 regular and 46 special students in our freshman year as shown in the 1884-1885 catalogue leaves 41 for additions from other classes, colleges, and the School of Mechanic Arts.

We were all glad to meet Charlie Stone again and enjoyed talking with him about his recent experiences. Six were present at the Symphony Hall Alumni Dinner and Concert on June 8. They were: Horn, Runkle, Sawyer, Sjöström, Webster, and Wood.

Ned Webster is now Doctor Webster, as he received the degree of Doctor of Laws from Northeastern University on June 12. He says that he enjoys his class dinners just as much as the rest of us and will be glad to continue them, but under the present administration he is not sure just how long that will be. Ned returned from his salmon trip on July 16 and he says that he had good luck, taking exactly 100 with an average of just under 18 pounds each, the largest being 36 pounds.

Our "regular taxi service" between the Boston and Albany station and the Webster estate was maintained by our staff chauffeurs, Hamblet and Ellis, Conner being away, and we had the two big limousines full to capacity. Sanford Thompson offered his car but we did not receive his letter in time.

Leonard Brown listened to the alumni concert, June 8, via radio in his Washington home, 1316 Euclid Street, North West, and hopes to be with us at some

1888 Continued

future date. — Freddie Cole was detained at home by illness. — John Faxon sent his regrets and added the following: "As the Irishman once said, 'If I live till I die,' I will permit nothing to interfere with my sharing in the 50th anniversary. Till then, my greetings, good wishes, and hopes that the line will not be thinner and that every good thing will attend us all." That is the right spirit, Johnnie. — J. O. Handy is chemical director of Fruit Treating Corporation, 541 Brookhaven Drive, Orlando, Fla. His work covers the cleaning, coloring, and shrinkage of oranges, and so on. He says he finds gardening in Florida a pleasant avocation. — Benoist S. Redd still lives at 528 West 123d Street, New York City. He called on Ben Buttolph in Providence recently.

Smoky Joe Wood has applied for and obtained a job as '88 staff correspondent, having been retired over a year ago by the Manufacturers Mutual Fire Insurance Company, of Providence, R. I. He says he is now a loafer and has forgotten what it is to work, but he has started work on his new job by sending in an item about Norman P. Work who was one of us in our first year when his home was in Middletown, Conn. He is now a veteran retired school teacher in Yonkers, N. Y., where he taught for over 30 years.

Have just received nine pages from our Chicago-Florida Fred Nichols, who alternates between North and South each year and tells 163 friends of his all about it by means of "Gel-Sten" letters. The doctor ordered him to play golf and he does most of the time. The best thing he says in his long letter is: "I would like to spend a few weeks in Boston and in June, 1938, I hope to attend the 50th reunion of my Class at Boston Tech." That's right, Freddie, we all will be glad to see you and hear some of your golf stories.

Stephen Child died June 15, just nine days after our last class dinner at Ned Webster's when we received a telegram stating that his address was 44 South State Street, Painesville, Ohio. Your Secretary wrote to this address, as well as to the Parmly Hotel where he lived previously, to find out some details of his last sickness as well as of the last three or four years since he left San Francisco, Calif. He has had no replies to these letters and so can only repeat some of the high lights of his career from our class records: Child entered the Institute with our Class from his home in West Newton, Mass. After graduation he was assistant engineer in charge of Malden, Maynard, Randolph, and Holbrook Water Works for about six months, after which he was with the Barber Asphalt Paving Company, in Buffalo, N. Y., and Washington. He was married in 1891 but left no children. From 1891 to 1901 he was deputy street commissioner and superintendent of sewer division, city of Newton, Mass. From 1901 to 1903 he was a special student at Harvard and Arnold Arboretum in landscape architecture. From 1903 to 1914 he engaged in the practice of landscape architecture and city planning, maintaining offices in Boston and Santa

Barbara, Calif. For the following three years he supervised the construction of city parks in California from his office in San Francisco. From 1918 to 1920 he served as a \$1.00-a-year man on the staff of the United States Housing Corporation, Washington, D. C. After that he traveled extensively in Europe and wrote many articles and books on landscape architecture and town planning. In 1922 he delivered a lecture in French before the International Architectural Congress in Brussels on "Zoning." From 1924 to 1932 he maintained his office in San Francisco. Child was one of the best authorities in his special lines in this country and Europe. We mourn his passing.

We have just learned that Thomas R. Kimball, of the firm of Kimball, Steel and Sandham, Omaha, Neb., architects, who entered with our Class but was later classified with '89, passed away on September 7, 1934.

Your Secretary undertook a new rôle this summer in connection with the Great Chebeague Golf Club, that of general manager of a "Major Bones Amature Night" which consisted of 25 separate acts with entertainers on the harmonica, ukulele, trumpet, guitar, piano, bones, and drums; also songs — duets and quartettes — yodeler, three tap dancers, exhibition of fencing, and a "gong artist." Our largest hall with a capacity of 450 was filled to overflowing, 75 being unable to gain admittance. Sixty per cent of the entire population of the Island were there including both summer people and natives. Your Secretary also admits that he won another golf cup, with the assistance of his son-in-law, namely the "father and son" cup, with an actual score of 81 strokes for 18 holes. He also admits that your Secretary played approximately 1,250 holes of golf this summer, using over 6,000 strokes. Now let Fred Nichols, Harry Horn, Ned Webster, Sanford Thompson, William Besler, and others of our famous golfers tell one. — BERTRAND R. T. COLLINS, Secretary, Chebeague Island, Maine.

1889

The Secretary has to report the deaths of J. Sumner Draper on March 14, George W. Rounds on May 8, Roger Morgan on September 8, and Irving T. Guild on September 10. The Boston *Transcript* had the following about Draper: "J. Sumner Draper, former President of the Boston Real Estate Exchange and real estate operator in the company under his own name since 1893, died today at the Hotel Ludlow where he had been confined with pneumonia. He was 67 years of age. Mr. Draper had been associated with the real estate business since 1893, four years after he was graduated from M.I.T. He was a former member of the Exchange — of which he was president in 1913-1914 — the Algonquin Club, and The Brookline Country Club. Born in Canton in 1868, he was a son of Thomas B. Draper and Sarah D. T. (Sumner) Draper. He prepared for college at English High School. His chief work during his 45 years in the real estate business was the development of the Park

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Square district. His winter home was at 27 Canton Avenue, Milton, where he was a member of the Milton Club. He spent his summers in West Chop, Martha's Vineyard. He leaves his wife, the former Alice Ames Copeland, whom he married in 1894; a daughter, Mrs. R. Dudley Peters of Milton; a son, Copeland M. Draper of Milton; a brother, Edward D. Draper of Canton; and two sisters, the Misses Nancy T. and Ruth M. Draper, both of Canton. . . ."

The *Transcript* also had the following regarding Morgan's life: "Hartford, Conn., September 9 (AP) — Roger Morgan, 69, son of the founder of the Morgan Envelope Company — now part of the United States Envelope Company — and a colonel on the staff of former Governor Roger Wolcott of Massachusetts, died in St. Francis Hospital here late yesterday. Mr. Morgan, a native of Springfield, who had lived in Hartford for the last five years, was born February 18, 1867, and attended Phillips Exeter Academy and the M.I.T. A few years after graduation, he joined his father in the envelope business and later organized a company of his own in Watertown. While in Springfield he organized and became the first captain of Company K, Massachusetts State Militia."

Guild had been in poor health for some years and had been living at 51 Sargent Street, Melrose Highlands, Mass., where the Secretary saw him in April last. — Regarding Rounds, the Secretary has no particulars but would be glad to hear from anyone who has information. His last address of record was Seattle, Wash. — The Secretary had a call from Charles H. Deetz recently, but unfortunately was out at the time.

The annual dinner was held at the Boston Architectural Club, April 29. Those present were: Bliss, Boutwell, Conant, E. V. French, Hobbs, Hunt, Kilham, Lewis, Marsh, Orrok, Pearson, Smith, Thurber, and Wales, and a good time was had by all. Rankin wrote: "I am very sorry that it will be impossible for me to be at the annual dinner this year. It is something that I had sort of promised myself but conditions do not permit. For the last six or eight months I have been the director of Districts 4 and 5, WPA, state of Pennsylvania. The two districts comprise the city of Philadelphia and four populous counties adjoining. With the exception of New York City — which is a separate operating unit — and possibly the exception of Chicago (the figures for which I am not familiar with), my unit is the largest and most important in the United States. I have now 60,000 people at work and to keep them at work it takes me from 12 to 14 hours a day. You will see, therefore, that my opportunities for getting away are just about nil. I hope that you and the rest of the Class who are fortunate enough to get to the annual dinner will have the usual joyful occasion."

Howard wrote: "I am very sorry that I cannot be present at the annual dinner on April 29, but shall be in Washington attending the annual meeting of the

1889 Continued

United States Chamber of Commerce at that time. We have had a very pleasant winter, a large part of it spent in and around the Bahama Islands. Several M.I.T. men have cruised with me this winter, the last one being Dr. W. R. Whitney from Schenectady. With warmest regards and best wishes to all my old friends." — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

1891

Our friend and classmate, Charlie Aiken, passed on at the Franklin Hospital, Franklin, N. H., on Tuesday, September 1. He was seriously ill for several weeks and gradually grew weaker, until his heart finally gave out. The funeral was on the following Thursday and Gorham Dana wrote Barney as follows: "We buried good old Charlie Aiken today at the cemetery in Franklin. There was a large gathering at the house, perhaps 50 or 60 people. The casket was in a small room almost filled with flowers. The Class sent a large set piece consisting of a wreath of white lilies, pink roses, white and purple asters on a stand, with gladioli at the base. An Episcopal minister — head of the Holderness School — conducted the service. Charlie was president of the Holderness School Alumni Association. The pall bearers, consisted of four classmates: Hopton, Howard, Forbes, and Dana; the President of the M.I.T. Alumni Association, Donald Robbins '07; and a lawyer from Brooklyn, Mr. Maxfield. — Charlie was a grand fellow and we will all miss him terribly, especially our Sunapee group."

Mr. Aiken was born in Franklin, N. H., and started his educational training in the "Pond" schoolhouse at the head of Webster Lake. He went to the Holderness School for some five years and then went to Exeter for a short period before entering Technology in 1887, graduating with the Class of 1891, Course II. His first job was with the Cowles Engineering Company of Brooklyn, designing small boats, marine engines, and Cowles boilers. From 1892 to 1897 he was chief engineer with Curtis Davis Soap Company, Cambridge, Mass. This was a progressive concern and he designed various types of soap machinery which they sold to others. They also acted as engineers in building soap plants.

The next three years were spent in Boston, in business for himself as a soap engineer and sales agent, doing work for various large concerns and designing soap machinery. Because of work done for Babbitt and Company he went with them in 1900, modernized their plant, and introduced new processes, including a new crude glycerine recovery plant. He supervised the building of a new plant at Hackensack, N. J. After a short time as chief engineer with Procter and Gamble he joined forces with Mr. Houchin who had been in the soap machinery business for some time, forming the Houchin Aiken Company, with a plant in Brooklyn, N. Y., and later a new plant in Hawthorne, N. J. They designed and equipped soap plants in this country and abroad.

Because of the serious illness of his wife, he sold out his interest in the Houchin Aiken Company, took her to Webster Lake, and business became a side issue. She died in 1927. Since then he had been in business for himself, doing consulting work, designing, and selling soap machinery. In 1929 he went to Australia for a year to construct a soap plant in Sydney for the Bon Ami Company. He acted as a consulting engineer for Lever Brothers, especially in connection with the development of spray drying of soap. As a designer and inventor of soap and glycerine machinery, he was well known throughout the country and played an important part in the development of this industry. He came by this inventive talent naturally: His father and grandfather were both inventors, notably in the knitting industry, and designed and brought out the first rotary knitting machine.

Charlie married a second time, after his return from Australia, and he is survived by his widow, Mrs. May W. F. Aiken; a daughter by his first wife, Mrs. Roger B. Johnson of Belmont, Mass.; and a grandson, Roger B. Johnson, Jr. Charlie was vice-president of the Alumni Association of M.I.T. from 1924 to 1926 and a member of the Executive Committee from 1921 to 1923. On the Alumni Council he was representative-at-large from 1919 to 1921 and class representative from 1920 to 1925. He was also representative of the Technology Club of Southern Texas from 1926 to 1929. He was a man of honor and integrity. Perhaps his most notable characteristics were kindness and unselfishness. His life was one of service to his family and others. He was the highest type of a Christian gentleman. His sense of humor, his story telling, his contributions to the pleasure of our gatherings — frequently acting as roastmaster — were all an expression of his love and affection for his friends and classmates. Few men have done so much to bring joy and happiness to others. As undergraduates and as cofounders of the Phi Beta Epsilon fraternity at Technology, together with Walter Hopton, Gif Thompson, and others, your Secretary became acquainted with the fine qualities of Charlie Aiken. This friendship lasted through the years and, as with others who knew him, never will be forgotten. With his death, the Class has lost one of its most loyal members, and I know his classmates all join me in this brief tribute to a most lovable character.

The *Detroit News* of August 25 mentions the death of Ross L. Mahon who is listed as M.I.T. '91. We have not heard from him for many years. "... Mr. Mahon was born in Detroit and was a graduate of the literary and engineering colleges of the University of Michigan and the M.I.T. He was one of the engineers in charge of the construction of the Sault Ste. Marie ship canal and was one of the organizers of the Thumb of Michigan Association. He leaves two daughters and a sister. His wife, who died in 1924, was the daughter of L. A. Sherman, publisher of the Port Huron *Daily Times*."

The 45th reunion of the Class was held at East Bay Lodge, Wianno, Osterville, Mass., on Friday, Saturday, and Sunday, June 19 to 21. This is the third of our five-year reunions at this homelike hostelry. There were 36 who attended some or all of the festivities, this honor roll consisting of: Aiken, Barnes, Bird, Blanchard, Bowen, Bradlee, Brown, Capen, Clark, Colburn, H. I. Cole, Dana, Douglass, Earl, Ensworth, Fiske, Forbes, Fuller, Garrison, Gottlieb, F. C. Holmes, Hopton, Howard, Punchard, Putnam, Read, Ryder, Spooner, Swan, Tappan, Thompson, Vaillant, Walker, Wilder, Wilson, and Young.

Seventeen men met at the University Club, Boston, at 10 A.M. on Friday and motored to Wianno. Aiken and Hopton motored from Webster Lake, Franklin, N. H. George Vaillant left his summer home at Washington, Conn., early Friday and picked up Bowen and Young in Boston. Read came from Worcester and brought Earl along. F. C. Holmes drove over from Plymouth. Putnam came from his daughter's home at Dennis, Mass. Ensworth drove from Hartford. Bird, Swan, and Spooner came to Boston from New York on the boat, Thursday night. Gottlieb came over on the boat Friday night and Brown picked him up at Wellesley, reaching Wianno Saturday noon. Cole picked up Capen and Mrs. Earl at Cohasset on Friday morning.

Garrison motored across the country from his home in Santa Barbara, a nine-day trip, and had no competition for the long-distance prize. He arrived a few weeks ahead of the reunion and there were several get-togethers with his classmates, including a visit to Dana's home at Lake Sunapee. He says this is probably his last trip East for some time as he is now definitely settled on the Pacific Coast with his married son in Los Angeles, his daughter in San Francisco, and other relatives. Charlie does not seem to have changed at all, bright and cheerful as ever, and of course wedded to the outdoor life and beauties of the Pacific Coast.

Gottlieb came from his home in Harrington, Del., and it was fine to see him again after a lapse of some ten years. — Swan is now located in Washington with the Bureau of Navigation, which is to be part of a new division handling all marine matters for the Federal government, as provided by a bill recently passed by Congress.

The first item on the program was the clam bake at Giffords in Cotuit. Twenty-six men attended, with the usual result of complete satisfaction to all concerned and the elimination of any desire for physical activity for the rest of the day. Movies and stills were taken to record this important occasion. Relaxation on the hotel piazza was next in order, followed by a late supper. The main event at supper was the presentation of a birthday cake to Charlie Garrison. The number of years is unimportant. More talkfest and oratory took place during the evening, enlivened by one bridge game and one game of Monopoly. We properly qualify for the Gay Nineties when only four

1891 Continued

admit knowing how to play bridge. Dana furnished the Monopoly game, explained how to play it, and won the prize which was the game itself.

The weather continued good through Saturday, and during the day four played golf at the Wianno Club — Blanchard, Bradlee, Fuller, and Fiske (let their names be duly recorded). Two — perhaps more — pitched horseshoes, some motored and made calls, and others stuck to the piazza. A group photograph was taken just before lunch, and Harry Bradlee donated a copy to each of those present. Blanchard, as usual, proved to be the best golfer, but he admits playing somewhat regularly, which was not admitted by anyone else. The score card properly disappeared, but Blanchard was in the low 90's, the rest having no interest in the score.

The banquet Saturday evening was the high light of our festivities. Charlie Aiken was toastmaster and handled this job in his usual inimitable manner. A banquet without Charlie is inconceivable (This paragraph is copied from my notes as written. Charlie Aiken died in September — Secretary). Before sitting down we drank a silent toast to those who have passed on, and the Secretary read the names of those who have died since our 40th reunion — 24 in all.

Rowland Barnes was the chorister; his voice has lost none of its beauty and vigor. He sang a song to Barney which was received with much applause. Barney responded with an expression of love and affection for his classmates and appreciation of all they have done for him. We are all indebted to him, rather than he to us, he has done so much to promote class good-fellowship, constantly keeping in touch by birthday cards and letters, with members of our Class all over the country. We were all very glad that Barney could attend this reunion as it added to everyone's pleasure. Toward the end of the dinner a birthday cake was presented to Edward Earl. This is the first time that we have had the pleasure of presenting two birthday cakes at one of our outings. Charlie called on various ones for appropriate or inappropriate remarks, but as no stenographer was present, they will go unrecorded.

The Secretary read a number of telegrams and extracts from letters. Lack of space prevents using these letters. They will appear in the class book. — Regret was expressed that we had not heard from F. Clouston Moore. He is one of our regular attendants. However, since the reunion we have heard from Clouston. He went to a hospital on May 30. On July 24 he wrote that he was improving and expected to leave the hospital within a couple of weeks. — Ed Smith and Warren expected to come but could not make it. Rogers is not well or he would have come.

After dinner we adjourned to the main lounge for a short business session and movies. Following the Secretary and Treasurer's reports and the statistics, prizes were awarded: for golf to the best foursome, which also was the worst — names given elsewhere; for Monopoly to

Dana; to Charlie Garrison for coming the furthest distance; to Harry Young for general usefulness.

Gorham Dana officiated at the movie exhibition as usual. First were movies of the 35th reunion taken by Horace Emsworth; then movies of the 40th, taken by Gorham, followed by some Java and Bali pictures and a colored film by Gorham. The movies of former reunions are most interesting and one cannot help wishing we had movies of those way back in the dark ages when our costumes and general appearance were so different.

Sunday was a day of good-byes and regret that our delightful party was over. Some left for home in the morning, but most of us stayed for lunch and left in the afternoon. The weather continued good; we have always been fortunate on weather since coming to the Cape at this time of year.

Gorham Dana tells of an outing on Sunday, June 28, which started at Walter Douglass' summer home in New Hampshire and ended at Charlie Aiken's home at Webster Lake: "We all met at Walter Douglass' at 10 A.M., enjoyed his garden and his cocktails. Then on to 'Ematuyus,' where I showed them my new football golf set — played by kicking a small football into cans sunk in the lawn. Then to Powers' attractive summer place where we saw his view of Lake Sunapee through the trees. Then to Howard's — half a mile away — where the numerous grandchildren were doing stunts in the water, the newest being to go under water with a home-made diver's helmet over the head. Then to Dr. Davis Dewey's, where we admired his wonderful display of flowers which is his principal hobby. He had accepted Charlie's invitation to dinner over the telephone not knowing what his family had planned. Bradley Dewey '09 explained to us that it was his parents' 50th anniversary of their wedding and a surprise party had been planned, including the presence of his brother, John Dewey, who came back from Austria ahead of time for the event. So we went to Franklin without the Deweys and as usual had a delicious dinner. Powers could not come, but Hopton and his wife were there. Douglass had his son and daughter-in-law and Howard had a daughter-in-law. The rest had wives. We took some pictures, but it was too cold for bathing. About 4 P.M. the Deweys arrived — Dr. and Mrs., Bradley, and brother John. The old doctor was in fine fettle. We gave him a class cheer and broke up about 4.30 P.M. — quite a day!"

Jim Swan made a short trip to Hamburg, Germany, in August. We have not heard from him since his return. — Arthur Alley went on an auto trip to Victoria, B. C., this summer.

Professor William H. Lawrence and Mrs. Lawrence spent the summer at Kearsarge Hall, North Conway, N. H.

The following appeared in a Tacoma, Wash., paper of June 8: "Scattered through the various, vast engineering projects of the Northwest, Coulee Dam, Bonneville Dam, and of the world, are engineers who look back on their school-

boy days and the training they received at the hands of one of Tacoma's well-known citizens when he was a professor at Washington State College — W. J. Roberts. And every time the citizens of 43 towns scattered over Washington, Oregon, and Idaho take a drink of water, they owe a debt of gratitude to the same pioneer Northwest engineer who installed their water supply systems. These include: Wenatchee and Colfax, Wash.; Cottage Grove, Hood River, Grants Pass, and The Dalles, Ore. Moreover, one can hardly drive from one town to another without running over a highway William J. Roberts knew when it was a deer trail and it is very probable he had it surveyed, for he is credited with designing some of the principal highways of the state.

"During the World War he had charge of installing 40 miles of water mains and 30 miles of sewer mains in Fort Lewis in 78 days and later was chief engineer for the intercounty river improvement, sponsored jointly by Pierce and King counties in controlling the waters of the White, Stuck, and Puyallup rivers. He did much of the work during the comparative infancy of the project.

"Born in the Caroline Islands in 1860, Mr. Roberts came to White Salmon, Wash., as an infant of two years when the family moved to The Dalles. After being graduated from the state university in 1886, he attended the M.I.T. in Boston, graduating in 1891. . . . He was city engineer in Medford and in Colfax, and Washington state highway commissioner from 1911 to 1913. Mr. Roberts makes his home at 608 North Sheridan Street, Tacoma."

We have heard from Charlie Garrison since his return to the Pacific Coast. He motored a total of 7,545 miles, East and return. Very hot part of the return trip, 110 degrees in the Salinas Valley. He found his daughter was ill, but we understand she is now all right again. She has given up her job in San Francisco. — Charlie sent all his worldly goods to the Coast and now considers himself a "permanent." We hope he will come East once in a while.

George Hooper writes of an auto trip in California. George mentions also a dinner to Dean Bush '16 held in June: "about 60 men turned out — Wilkinson and I representing our Class, which was the oldest represented." Word has been received recently of the passing of Edward Hagan Shaw of 1307 El Centro Avenue, Oakland, Calif., on August 31. He was at Technology half a year. — Will Hawley writes: "I would like to see the boys very much, but was too busy to get away (for reunion). Hope for class dinner in the winter." — HENRY A. FISKE, *Secretary*, care of Grinnell Company, Inc., 260 West Exchange Street, Providence, R. I. BARNARD CAPEN, *Assistant Secretary*, care of Early Convalescent Home, Cohasset, Mass.

1893

John Ormsbee Ames of Providence, R. I., died on March 30, at the age of 64 years. From the time he left the Institute

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his home and business connections were in Providence. He entered the employ of the Fletcher Manufacturing Company as clerk, was made secretary in 1895, agent in 1902, and treasurer in 1912. In the latter year he became treasurer of the International Braid Company and in 1916 a member of the firm of Goddard Brothers. He had served as president of the International Braid Company; vice-president of the Providence Institute for Savings, the Berkely Company, and the Blackstone Company; director, Providence National Bank, Firemen's Mutual Insurance Company, Union Mutual Insurance Company, Morris Plan Company of Rhode Island, Providence Gas Company, and Rhode Island Power Transmission Company. He was a member from 1915 to 1920 of the Rhode Island State House Commission which built the beautiful state capitol. He served for a time as Federal trustee of the Rhode Island Company (Providence Traction System). Ames volunteered in the Spanish War and became first lieutenant of infantry, commanding Company A, First Regiment of Infantry, Rhode Island Militia. During the World War he served as treasurer for Rhode Island of the United War Work Campaign and was a member of the executive committee of the Liberty Loan Committee of Rhode Island. He belonged to the Delta Psi Fraternity and held a membership in the Hope Club, Agawam Hunt Club, Squantum Association, Rhode Island Chapter of the Society of the Cincinnati, Racket and Tennis Club, and Merchants' Association of New York City. He married Miss Madeleine Livermore Abbott in 1900 and his home was at 121 Power Street, Providence.

Samuel P. Waldron retired as contracting manager in charge of the Boston office of the American Bridge Company on July 1, thus ending 35 years' service with that company. Bridge building has been his life work. For four years following graduation from Technology he was employed by the Boston Bridge Works at Cambridge as draftsman, later holding a similar position with the Pennsylvania Steel Company for a short time. From 1898 to 1900 he was assistant engineer of the Keystone Bridge Works and in 1900 to 1901 was assistant engineer of the Eastern Bridge and Structural Company of Worcester. In May, 1901, he entered the Berlin plant of the American Bridge Company, serving for a year as chief draftsman and then as engineer in charge of the plant. In 1903 he was transferred to the American Bridge Company's New York office, where from 1905 to 1912 he held the position of designing engineer. In 1912 he was transferred to the contract department and on January 1, 1913, was made manager of the company's Boston office. Here he was for more than 23 years prominently identified with bridge building in New England where he made a host of friends. His retirement for age is in accordance with the established practice of the American Bridge Company which by appropriate announcement paid tribute to his "long and faithful service." He is looking forward to

enjoyment of well-earned leisure at his home, 732 Great Plain Avenue, Needham, Mass.

The following changes of addresses have been received: James C. Boyd, 176 Middle Street, Portland, Maine; William W. Cutler, Suite Number 3, 401 Beacon Street, Boston, Mass.; Professor Ervin Kenison, 5 Grove Street, Bloomfield, N.J.; John I. Solomon, 607 Fifth Avenue, New York, N. Y. — FREDERIC H. FAY, Secretary, 11 Beacon Street, Boston, Mass. GEORGE B. GLIDDEN, Assistant Secretary, 551 Tremont Street, Boston, Mass.

1895

Alumni Day is the yearly great event at the Institute. Our Class had its 40th reunion last year, so it was not to be expected that '95 would have a large gathering at these festivities this year. It was a great opportunity for your Secretary who, care free and having no one to provide for, enjoyed the festivities as never before. He managed to appear at luncheon, just prior to the closing bell, and was served to all the good things as if he were an exclusive dignitary.

The attendance at the Class Day exercises brought revelations of the changes made in the program of some 40 years past. Percy Churchill and Frank Miller were on hand at this event. The christening of the dinghy was unique; the exhibition of the fleet at the Sailing Pavilion was most interesting. Frank Park was discovered in the front row on the balcony, refreshing his memory of his boyhood seamanship.

The Pops Concert at Symphony Hall was the crowning event of Alumni Day. Ninety-five was represented to the extent of six men: Billy Hall, Sammy Hunt, Frank Miller, Frank Park, Jerry Swope, and Yoder. For intellectual guidance we had the pleasure of Professors W. J. Mead and L. B. Slichter of the Geology Department, to make a most enjoyable table of eight. The outstanding event of the evening (to our '95 group) was the toasting to the health of our 19 months' old Gerard Swope, 3d. Tommy Booth was sadly missed, as he was compelled to remain at home on account of illness. Tom is O.K. now.

William B. Claflin is now in the West seeking a restoration to health. — From the *Journal* of the Engineering Societies of New England, we quote: "Professor Harold K. Barrows of the M.I.T. was elected president of the Boston Society of Civil Engineers for 1936 to 1937, at its 88th annual meeting. In addition to his position as professor of hydraulic engineering at M.I.T., he is consulting engineer in Boston, specializing on waterworks, sewage systems, power development, and flood control. During the present year, he has been first vice-chairman of the Engineering Society of New England; he previously served as chairman of the Engineering Society of New England committee on public affairs and legislation."

In response to the "pathetic appeal" of your Secretary in a recent issue of *The Review*, came a letter from Judson Dick-

erman, a few excerpts from which follow: "I, for one, find a growing appreciation of those men of the Class who maintain efforts to keep us informed and in touch with one another. As we grow older possibly we feel a more gentle interest in those with whom we associated as college mates. One of the blessings of advancing years is that we all come nearer a common level of comradeship. . . . During the past year I have traveled about 10,000 miles over natural gas pipe lanes. I have prepared two chapters on technical problems and operations of the Natural Gas Industry which appear in the final summary report of the Federal Trade Commission designated as 'Number 84-A-Report on Utility Corporations.' These Chapters IV and XI may interest some who would like a reasonably quick view of typical developments and problems of that industry. The new year found me at sea on a mission for the government to Puerto Rico — an interesting island where the 1,600,000 people manage to live and multiply to the tune of 40,000 a year even if one third of the population is next to starvation. At present my government work is finished and I do not know what will offer itself next, though my regular job is as engineer with the Federal Trade Commission."

On Saturday, May 23, Alfred P. Sloan, Jr., President of General Motors, officiated at the formal dedication of the new \$2,500,000 assembly plant of the General Motors Corporation at South Gate, Calif., and also delivered the principal address at the 45th annual banquet of the Los Angeles Chamber of Commerce in the evening preceding the dedication. The huge plant — a model of modern factory construction — can reach a total capacity of 400,000 cars annually. Working at full capacity it will have a personnel of 1,500, with an annual pay roll of more than \$1,500,000. As part of the dedication an unusual sunset symphony concert in the Hollywood Bowl was arranged under the auspices of the Los Angeles Chamber of Commerce by General Motors as a token of welcome to the automobile makers. During the intermission Mr. Sloan spoke to the assembled thousands and to a nation-wide audience of millions through a hook-up of 66 NBC stations. This account was received from our old friend Al Zapf in Orange, Calif.

Notice has been received from C. E. Locke, Secretary of the Alumni Association, to the effect that David Wilkinson, a special student in our Class in the Mining Department, and who for a number of years was in South Africa, is now an invalid, owing to rheumatism, and is confined to a wheel chair. His present address is care of Mr. C. B. Brodigan, Consolidated Gold Fields of South Africa, Moorgate Street, London, England. — It is rumored that W. F. Patten, formerly of Chicago, is now living in or around Boston. If he sees this notice, will he kindly send his correct address to the Secretary?

With the deepest regret we record the death of our John Colvin Wolfe. John died of coronary thrombosis at the Charlotte Hungerford Hospital, Torrington,

1895 Continued

Conn., on Sunday night, September 20. It is impossible to give further information in this issue. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, Graybar Building, 420 Lexington Avenue, New York, N. Y.

1896

Our 40th anniversary was celebrated at East Bay Lodge, Osterville, Mass., Thursday, June 4, to Sunday, June 7, inclusive and it was a most successful and happy time. Conditions were ideal. The weather was perfect and the attendance was excellent. The presence of a number of wives was a notable feature, and added to the joy of the occasion. Charlie Brown proved to be again the same rare host. It was a pleasure to welcome five new men who had never attended a previous reunion: John Brooks, Joe Clary, Walter Leland, Paul Litchfield, and Ed Northup. There were, of course, the few usual disappointments of men who had expected to come and then at the last minute found themselves unable to do so. On the other hand three men turned up who had not planned in advance to be present: Butler Ames, Joe Knight, and Sam Smetters. Perhaps the happiest feature was that Lou Morse and Ed Northup, who only a few days before had reported definitely that they could not be present, finally developed an uncontrollable urge at the last minute and were with us for the entire period. It illustrates the strong appeal that exists for the men to get together on these five-year reunions.

Over 25 men had arrived by Thursday night, including Fred Damon and Bob Davis, who set up official headquarters in the Annex. Some arrived early enough for golf in the afternoon. The golf tournament was in charge of Fred Damon and Joe Driscoll. While no set program of events had been planned, the time went by all too rapidly, and everyone seemed to be busy and happy, visiting, motoring, golfing, and so on. Incidentally no one missed a meal, as far as any record exists. The first scheduled event was an informal movie show on Friday evening when Doc Coolidge and Henry Jackson showed the '96 films of the reunions of five and ten years ago, and Coolidge wound up with a beautiful colored movie which he took on a trip to Mexico. In order to have a record of our 40th anniversary Arthur Baldwin and Doc Coolidge officiated as camera men and planned to take movies of all who were present.

At the class dinner on Saturday evening there were 55 classmates, and the ladies' table seated six wives. It was a jolly affair. Messages were read from Charlie Hyde, Billy Andrew, Joe Stickney, Bill Root, Mike Sturm, and Haskell Smith. A feature not on the program was introduced, and might be designated as an alphabetical feature *à la* New Deal, calling it ABC, in which A stands for Anderson, B for Bakenhus, and C for Crosby. It was initiated by Anderson and brought back memories of youthful days featuring such games as post office and Copenhagen.

The Secretary's report was, as usual, accepted without reading. The Treasurer's report showed that the balance on hand in the dues account amounted to \$925.69, with \$125.00 in the scholarship account and \$514.22 in the book fund account, making a grand total of \$1,564.91. However, there is \$746.95 of this total still tied up in the closed Central Trust Company of Cambridge and what may be salvaged from it is problematical.

Silent standing tribute was paid to those who had attended former reunions and had passed away since 1931: Burgess, Dickinson, Hayward, Morris, Shepard, Jim Smyser, Wise, and Woodwell.

The present recipient of the class scholarship, Frank Gardiner '38, is doing splendid work. — A letter of appreciation was read from Edwin Palmer, and Rockwell spoke somewhat at length on his case and the future possibilities of the boy's health and employment. The general opinion seemed to be that the Class should carry on its contribution for assisting this young man and the matter was left in the hands of the Secretaries.

The old '96 quartet was present — Barker, Leighton, Stearns, and Young — and being well oiled up they took the crowd back 44 years by singing in splendid voice the same song they first sung at our freshman banquet 44 years ago. — A delightful surprise feature of the evening was greetings by President Compton, transmitted through his telephone in Cambridge and broadcast by a loud speaker to the assembly. It came through perfectly. The Class in return voted to present its compliments to President Compton, expressing its appreciation and promising full support.

On the matter of the class book it was agreed that the sketches of the various members which had been prepared should be sent out to each individual for final revision and the book published, even though the funds were largely tied up. Any deficit involved in the publication would be prorated in selling the book.

The Secretary was called upon to stand up, and was presented by Con Young as spokesman for the Class with a large pipe which Con had imported from Florida, and which was guaranteed to have a capacity in excess of any pipe that the Secretary had previously had. Simultaneously the quartet burst out in song with special verses by Con Young beginning "Oh! Charlie dear, Oh! Charlie dear We greet you as a leader here. . . ." The Secretary expressed his thanks as best he could, but showed his real appreciation by getting the pipe immediately into action and demonstrating that it worked perfectly.

Paul Litchfield gave a brief but very interesting presentation of his work with airships. Doc Coolidge had brought on a lot of gadgets from Schenectady, and he kept us open-mouthed as he demonstrated one after another some of the recent startling developments in science. No other Class could have had such a talk and demonstration by one of its own members. Finally, Arthur Baldwin brought the meeting to a close by giving his bene-

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diction and expressing his enjoyment of the entire reunion. Incidentally Arthur held the honor of coming the longest distance from his home in Paris, but he had a close second in Walter Leland, who came all the way from San Francisco.

Some of the men got away Sunday forenoon, but others stayed until after lunch. However, they were all gone by night. Many participated in the events in Cambridge and Boston on Alumni Day, Monday, June 8, including the luncheon and other affairs at Technology and the Alumni Dinner and Pops Concert in Symphony Hall in the evening. — Statistics show that replies were received from 119 classmates, ranging all the way from those who could not possibly come to those who would surely come.

Charlie Brown, our honorary member, was of course on hand as host throughout the reunion. A total of 27 classmates arrived on Thursday, June 4, as follows: Mark Allen, Billy Anderson, Arthur Baldwin, Dan Bates, John Brooks, Joe Clary, Doc Coolidge, Buster Crosby, Fred Damon, Bob Davis, Jim Driscoll, Joe Driscoll, G. C. Hall, Johnny Hallaran, Joe Harrington, Charlie Lawrence, C. E. Locke, Charlie Moat, Lou Morse, Ed Northup, Karl Pauly, John Rockwell, Walter Stearns, John Tilley, Lucius Tyler, Perl Underhill, and Con Young. Twenty men arrived on Friday, June 5, plus Billy Clifford's son: R. E. Bakenhus, Harry Baldwin, Ed Barker, Billy Clifford (and son), Myron Fuller, Henry Hedge, Frank Hersey, George Hewins, P. B. Howard, Henry Jackson, E. C. Jacobs, Gene Laws, Marsh Leighton, H. C. Lythgoe, Charlie Nevin, Myron Pierce, LeBaron Russell, Sam Smetters, Bert Thompson, and Lloyd Wayne. The arrivals on Saturday, June 6, numbered 14 plus Leland's son: Butler Ames, Dave Beaman, Henry Grush, Will Hedge, Gene Hultman, Sam Hunt, Joe Knight, Walter Leland (and son Robert), Paul Litchfield, Eddie Mansfield, Jim Meluish, Elmer Robinson, Henry Sears, and Charlie Tucker. The seven ladies who favored us with their presence were: Mrs. Clary, Mrs. Coolidge, Mrs. Howard, Mrs. Lythgoe, Mrs. Mansfield, Mrs. Tucker, and Mrs. Young. There were six departures before Saturday night: Brooks on Thursday; Clifford (and son), Leland (and son), and Lythgoe (and wife) on Friday; Hultman and Russell on Saturday. This left 55 men at the class dinner Saturday night and, most important of all, six ladies as well.

Out of the classmates present at Osterville, 23 participated in Alumni Day events, Monday, June 8, including the sessions and luncheon at M.I.T., in Cambridge, and the Alumni Dinner in Symphony Hall: Bakenhus, Bates, Beaman, Clary, Jim Driscoll, Hallaran, Harrington, Will Hedge, Hunt, Jacobs, Laws, Litchfield (luncheon only), Locke, Lythgoe, Northup, Pauly, Rockwell, Smetters, Stearns, Thompson, Tyler, Wayne, and Young. Five other classmates who had not been at Osterville appeared at Alumni Day events: Bill Dorrance, Miss Hattie Gates, Frank Guptill, Mrs. Marion

1896 Continued

Lewis Lee, and Clarence Perley (luncheon only). The ladies observed included Mrs. Clary, Miss Driscoll, Mrs. Harrington, Mrs. Laws, and Mrs. Young, and there were undoubtedly others who were overlooked. — Mention should also be made of Mark Allen's son Richard, who chauffeured his dad to and from Osterville, but who did not actually stay with us.

The summary shows a total of 71 at Osterville, including 61 classmates, 7 wives, 2 sons, and one honorary member. The total on Alumni Day was 31, including 26 classmates, 2 class ladies, and at least 5 wives and daughters. After deducting names counted twice the combined attendance at the class reunion and Alumni Day was 64 classmates, 2 class ladies, 2 sons, one honorary member and at least 10 wives and daughters, making a grand total of 79.

Golf tournament was run by Damon and Joe Driscoll, and the latter submitted the following report: Handicaps registered (1935) were: Henry Jackson 12, Fred Damon 20, Joe Driscoll 15, George Hewins 30, Buster Crosby 30, Joe Harrington 30, John Rockwell 20, Henry Hedge 20, Billy Anderson 22, Myron Pierce 30, Lou Morse 23, Walter Stearns 22, Bob Davis 50, and Dan Bates 50. The first gross prize to Rockwell at 91 with handicap of 20 and second gross prize to Henry Hedge at 92 with handicap of 20. The highest gross was 130 and out of 14 entries only four beat 100 gross. The first net prize went to Davis at 68 with handicap of 50 and second net to Dan Bates at 73 with handicap of 50. Worst ball was 78 out (8-9-6-12-8-8-10-10-7) and 79 in (10-7-10-7-8-11-8-9-9), or 157 total. Best ball was 38 out (4-5-3-5-3-5-4-6-3) and 39 in (5-4-5-4-3-5-4-4-5), or 77 total.

One of the very attractive features of the class dinner in Osterville was the Technology song and music composed by Jim Melliush. He has turned it over to the Secretary for preservation and future use. — Fred Damon missed out on the Alumni Dinner in Symphony Hall on Monday because he was obliged to leave that afternoon for Skytop, Pa., to attend the meeting of the American Leather Chemists Association.

A post reunion note from Eddie Bragg told of his hard luck: The classes at the University of Michigan were still in session at the time of our reunion and he had to stay on the job. His health also was not of the best at that time, and any little exertion seemed to distress him, so that the doctor was watching his heart rather carefully. However, during the summer he reported that he was much better. The third factor was some special extracurricular work that was impending. He spent the summer on a farm in Vermont taking a quiet vacation.

The films have been turned over to the Secretary by Baldwin and Coolidge, and are now in the hands of Henry Jackson for preparation of the reel and titling in permanent form. Mark Allen has also turned over to the Secretary some fine snapshots of various members of the Class when he caught them off guard.

Bradley Stoughton, who had counted on being present, wrote that he was drafted to attend the meeting of the Society for the Promotion of Engineering Education in Wisconsin in June and, since the trustees had honored him only a short time before by making him dean of the College of Engineering, he did not feel that he could take additional time off to go to Osterville.

During the summer the secretary made two calls on Walter Pennell in Exeter, N. H. On the first he was unsuccessful, but the second found Walter at home, and he took pleasure in showing the old house that he has taken at 69 Court Street and fitted up to suit his needs, together with garage and a fine garden and lawn, which Walter frankly admitted was not entirely his own work, but to some extent the work of the hired man. He has officially retired from the telephone company after a long service, and he points with pride to the large number of telephone buildings, from the largest to the smallest, in the Southwest, which were erected under his *régime*. He is taking life easy in his retirement, but still finds plenty to keep him busy. One of his pleasures this summer was the presence of his young grandson. Anyone who happens to be in the vicinity of Exeter will find a royal welcome if he can call upon Walter.

Mort Sears called upon the Secretary in Cambridge the latter part of July. He and Mrs. Sears had been on a month's vacation by automobile to Montreal, Quebec, Gaspé, Nova Scotia, and Cape Breton. They were on their way back home to Washington. One of their experiences was on the famous Cabot trail up around the north coast of Cape Breton. It is one of those things that a person looks back upon with a great deal of pleasure, but would never undertake to do again, because according to Sears the road conditions in some places make the driver rather jittery. — Mark Allen was in Boston on Monday, September 21, putting his son Richard into the Babson Institute in Wellesley. Rockwell dined with him at the Copley Plaza, but it was the Secretary's hard luck to be away that day, and thus he missed the pleasure of seeing Mark. This was the occasion when Mark left the set of photographs of the reunion.

We are indebted to Paul Litchfield for a copy of the book entitled "The House of Goodyear" which came off the press early in the summer. While intended primarily to give a history of the Goodyear organization, it naturally tells a lot about the doings of Paul Litchfield as an integral and prominent part of the Goodyear development. — Lou Morse as president of the American Society of Refrigerating Engineers went into print by presenting the paper entitled "The Development of 'Freon-12' Refrigerating Machinery" at the Seventh International Congress of Refrigeration at The Hague, Holland, in June. Lou also presented a very interesting president's letter in the June issue of Refrigerating Engineering.

Mrs. Agnes Dyer, widow of our classmate Harry Dyer, reports that she is running a farm on Route 2, East Strouds-

burg, Pa., with the assistance of a hired man to look after the farm, the cows, the sheep, and 2,000 chickens. Her special objective is to board children on this place, where they will have all the advantages of country life with splendid food. It is particularly attractive for anyone who desires that their children shall participate in rural living.

Ben Shepard died at his home in East Orange, N. J., on May 11. He was with us four years studying architecture, from 1892 to 1896. He was a member of Chi Phi Fraternity and artistic editor of the '95 *Technique*. From 1896 to the time of his death he practiced architecture in East Orange, N. J. Ben was born August 30, 1872, in East Orange, the son of Benjamin and Kate Halsted Shepard. He married in East Orange on October 1, 1903, Mabel Anstis Green. He belonged to the Masons and the Elks, New Jersey Society of Architects, New Jersey Auto and Motor Club, Essex County Country Club, and the Kiwanis Club of East Orange. Ben gave us the pleasure of appearing at one of our reunions and we had hoped that he might come again. Mrs. Shepard reports that prior to the time of his death he had been in poor health for some time. A year ago he had a dreadful cold which brought on an asthmatic condition, with the result that he was sick all through the fall, and had only started to improve when he had another severe attack in the winter accompanied by nervous condition. He and Mrs. Shepard went to North Carolina for a month, which brought improvement and an increase in weight. However, they had been home only three weeks when another cold was contracted and this with the weakened condition of his heart was the cause of his sudden demise.

Elwood P. Sweet died in Concord Junction, Mass., August 17. He was with us only one year as a freshman in Course III. He was born September 12, 1871, in Concord Junction, the son of James H. Sweet, and his whole life was spent as a resident of that place. — CHARLES E. LOCKE, Secretary, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

1897

Tommy Atwood has recently made a trip from the South to Boston and Arthur Hopkins and the writer had a very pleasant hour's chat at the Boston City Club. He says that the engineering business is now very good, but that he likes to get away more frequently than he used to in his younger days in order to keep himself fit. He is planning to be at our 40th reunion in the spring.

From the New York *Herald Tribune* under date of April 21, Washington, D. C.: "Mrs. Orlando B. Porter of New York, daughter of Mrs. Charles E. Acker of Washington, was married here yesterday afternoon to Mr. George R. Wadleigh of Hastings-upon-Hudson, N. Y. The ceremony was performed at the home of the bride's sister, Mrs. Duncan Phillip, by the Rev. Albert Hawley Luca,

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canon of the National Cathedral School, Washington. A reception for members of the immediate families followed at the Phillips' home. There were no attendants. Mrs. Wadleigh is the former Miss Eleanor L. Acker of Washington. She was married in 1918 to Orlando B. Potter who died in 1928. Mr. Potter was president of the O. B. Potter Properties, Inc., a real estate management firm. Mr. Wadleigh is the son of the late Rear Admiral George H. Wadleigh and the late Mrs. Wadleigh of Dover, N. H. He was a widower. One of his sons, Mr. George F. Wadleigh, married Miss Laura Christine Armstrong of Livonia, N. Y., last June. . . .

We note with deep grief the death of Herbert W. Estabrook, President of the C. T. Sherer Company, on April 28. We quote from the *Boston Globe*: "Estabrook had been one of the most prominent business men in Worcester as head of the big department store, trustee of the Five Cents Savings Bank, clubman, and church leader. He was born in Spencer, May 9, 1873, and his boyhood was passed in Paxton and Natick. He attended M.I.T. and after his graduation went to Fall River, where he became associated with the late Charles T. Sherer, then a Fall River merchant and founder of the Worcester concern. Estabrook was associated with the Worcester store 34 years, the last 17 as president of the company. His widow is the sister of Joseph F. Sherer, Treasurer and General Manager of the store until the recent reorganization. . . . Estabrook is survived by his wife, son, and a daughter, Mrs. George T. Dewey, Jr. He was a vestryman of All Saints Episcopal Church many years and a member of the Worcester Club, Tatnuck Country Club, Bohemian Club, and University Club of Boston." We know classmates will miss him greatly, and to his widow and children offer our heartfelt sympathy.

Through Professor Locke '96 we learn that William C. Potter, mining engineer and President of the Guaranty Trust Company in New York, has been elected a director of the Anaconda Copper Company. — Nathan Hayward is president of the Franklin Institute, Philadelphia, Pa. This is modeled somewhat after the Deutsches Museum in Munich and has in addition other activities such as a physical laboratory and a biochemical laboratory. This Institute regularly makes awards for meritorious work in science.

One of the outstanding members of our Class and one seldom heard from is J. Franklin McElwain, President of the J. F. McElwain Company. His deep interest in the Institute is shown by his membership in the group of President Compton's Research Associates and also as one of the sponsors of Professor Schell's undergraduate Nautical Association. Each year he is invited to meet with a group of very interesting and bright young men, known as the Graduate Fellowship Group, who have had some business experience and display great interest in the discussions. The object is to give them a picture of the shoe and leather industry as a whole and

to discuss in detail the management, organization, and factory problem of the shoe manufacturer in general. His company is operating nine distinct units and produces about 40,000 pairs of men's Goodyear welt shoes per day. He has always been very active and keenly interested in business and business problems. He still is, but he realizes that it is time to let the other fellow, as he says, "run with the ball and help him make a touchdown." McElwain spent many days in Washington during the NRA period as a member of the Code committee for his industry and chairman of the committee on organization and statistics.

Once in a great while we come across a classmate so modest that he has disappeared from our sight for many years, only to be "discovered" as a man doing an important piece of work all unknown to his former associates. Such a man is Herbert Lyman, VII, who after leaving the Institute went to Montana, his home state, then came to Washington, joining the staff of the Weather Bureau. Here Lyman has worked for nearly 30 years. He is editor of the *Monthly Weather Bureau*, a publication dealing with highly scientific subjects, such as pressure distribution in relation to thunderstorms, solar observations, aerological observations, rivers and floods, weather on the Atlantic and Pacific oceans, climatological tables, and kindred subjects.

The Class records the passing of Percy G. Stiles, VII, with sorrow. From the *Boston Traveler*, July 6, we quote: "Dr. Percy G. Stiles, 61, who has served on the faculties of Harvard Medical School, Simmons College, and M.I.T., died yesterday at his home, 15 Page Road, Newtonville, after a nine-day illness. Dr. Stiles was born in Newtonville and was graduated from M.I.T. in 1897 and from Johns Hopkins University in 1902. He was instructor in physiology at Bellevue Hospital Medical College in 1902-1903 and since that time had taught physiology at the three New England institutions. He was a fellow in the American Academy of Arts and Sciences and a member of the American Physical Society and of the Society of Experimental Biology and Medicine. He was the author of a book, 'Nutritional Physiology,' published in 1912. He leaves two children, Edmund K. and Esther H. Stiles. . . ."

W. Edgar Reed writes from Pittsburgh that he survived the flood and the seven lean years of the depression. He is busy in his profession of electrical and mechanical engineering and developing useful applications for some of his patents. He sees Howard Noble and Klaus Steiner who seem to be in perfect health and quite active. — Proctor L. Dougherty, at Washington, D. C., has been drawn for jury service in the criminal branch of the District Supreme Court and, as a good citizen should do, he made no excuses and accepted service. — Harrington Barker, principal examiner, Division 47, United States Patent Office, is kept busy passing on the claims of would-be inventors of clutches and brakes, mainly developed in the automobile industry.

The passing of Joseph Bancroft came to us as a distinct shock. We always considered Joe as our classmate though he extended his studies into 1898. His death occurred on May 6 at the Homeopathic Hospital, Wilmington, Del., as the result of pneumonia. After leaving Technology Joe started his business career with the Joseph Bancroft and Sons Company in 1898, advancing to the chairmanship of the board of directors in 1928. He was president of the estate of Samuel Bancroft, Jr., Inc. In addition to his directorships in the Joseph Bancroft and Sons Company and subsidiary companies, he was chairman of the board of the Huntingdon and Broad Top Mountain Railroad and Coal Company and a director of the Wilmington Trust Company, the Philadelphia, Baltimore and Washington Railroad Company, Baltimore and Eastern Railroad Company, Farmers' Mutual Fire Insurance Company of the State of Delaware, and a member of the advisory board of the Liberty Mutual Insurance Co.

Joe was president of the former Every Evening Publishing Company, succeeding his father, who had owned the publication for many years and dictated its policies. His interest in the paper was sold in 1918. During the World War he was chairman of the local Selective Service Board Number 1 of Wilmington and as chairman of the bituminous coal committee for Delaware, directed distribution of all soft coal in this state; at the same time he was active in the Liberty Loan and Red Cross drives. A well-known Democrat, he was candidate for governor on the Democratic ticket in 1924. In 1919 he was appointed to the board of harbor commissioners of the city of Wilmington, being reappointed in 1925 and in 1931.

Joe was a director of the Wilmington Chamber of Commerce, the Boys' Club of Wilmington, and the Homeopathic Hospital. He took a prominent part in establishing the workmen's compensation plan in Delaware, serving as vice-chairman of the Chamber of Commerce group which studied industrial conditions there and in other cities and finally drafted the law that resulted in the Delaware Industrial Accident Board. He was an elector to the 1935 Hall of Fame of New York University. He held memberships in the Rotary Club, Chamber of Commerce, Wilmington Society of the Fine Arts, Delaware Society Sons of American Revolution, Colonial Wars, Wilmington Club, Wilmington Country Club, University Clubs (Wilmington, Philadelphia, and New York), The Players and the Grolier Club (New York), The Bibliophile Society (Boston), Book Club of California (San Francisco), The First Edition Club (London), American Institute of Chemical Engineers, Franklin Institute; fellow, Royal Society Arts and Sciences, London; director, United States Institute for Textile Research; American Society of Mechanical Engineers, Society of American Military Engineers, and the Torch Club of Delaware. He was a delegate to the recent convention of the International Association of Torch Clubs at Harrisburg, but was unable to attend.

1897 Continued

That his home city thought highly of Joe is attested by the following editorial that appeared in one of the Wilmington, Del., papers: "In the death of Joseph Bancroft, Delaware loses a worthy citizen who devoted much of his mature life to matters of concern to the public. Although he had extensive and important private business interests, he appreciated the circumstance that all citizens, so far as possible, should aid in shaping and assisting in the management of community and state affairs. He was a helpful member of the Chamber of Commerce. He wanted to see Wilmington go forward. He always was available for any service he could give in any undertaking looking toward this end. He had been a member of the board of harbor commissioners since the year following its creation. His heart was in its work. He had advocated a marine terminal several years before the terminal was established. And so it was with other enterprises in the interest of the public welfare.

"Mr. Bancroft, like his father, the late Samuel Bancroft, Jr., was a devotee of the arts, in which he was well grounded. He had joined with the other members of his family in presenting to the city one of the most valuable collections of English Pre-Raphaelite paintings ever gathered together. Important business interests in other parts of the country, as well as in Delaware, engaged Mr. Bancroft's attention. He was a director of many corporations. To each business with which he was connected he gave of his time.

"Although well educated as a youth, he always maintained a studious attitude, his aim being to learn all that could be learned which might be helpful to him in doing his part for the undertaking in which he had been asked to interest himself. Mr. Bancroft had a pleasing personality. He was friendly and enjoyed the companionship of those of his acquaintance. He was esteemed by all who knew him. His passing has occasioned profound sorrow in the community."

Wilfred Bancroft, his cousin, in writing to one of his classmates says: "You are quite right in speaking of his loyalty and devotion to M.I.T. affairs. He was undoubtedly one of the most loyal graduates and always took the keenest possible interest in the affairs of '97. I think I shall miss Joe more as the days go by. We grew up together; we were in school together; we roomed together the first three years I was at Tech; I helped him get married and he did the same for me; and although in later years, as we were both pretty busy men, we did not see as much of each other as we would have liked, still the bond between us was very close." We, his classmates, will miss him deeply, too, as the years go on and to his widow we offer our deepest sympathy.

We are sorry to have to add that another member of the Class has passed away. Alexander G. Caldwell, V, of Waban, Mass., died on August 24. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass. CHARLES W. BRADLEE, *Acting Secretary*, 261 Franklin Street, Boston, Mass.

1898

In support of the fact that Lester Gardner has played an important part in the development of aviation in America we insert a clipping from an article in the New York Times of August 23: "... It is the 20th anniversary of the founding of *Aviation* magazine by Major Lester D. Gardner, who has, in the two decades which have intervened, built other sound institutions in the field to which he has devoted such untiring effort. Of these the latest and most noteworthy, with a membership which comprises the world's leaders in aeronautics and allied sciences, is the Institute of the Aeronautical Sciences, of which the Major was the organizer and is now the active secretary. Among its many other activities its aeronautical index, unique and all embracing, now includes more than 350,000 cards and 1,000,000 references.

"Many of the colorful personalities of the air, of whom not a few are still active, who were writing flying history in 1916, will be recalled in a commemorative article to lead the forthcoming August issue of the magazine the Major founded. Under successive editorships, including that of Edward P. Warner ('17) in the near past and that of S. Paul Johnston ('21) at present, it has adhered to the policy laid down by its first editor in his inaugural editorial. Major Gardner wrote: '*Aviation* . . . intends to assemble this vast amount (of aeronautical information) and make it useful to the constructor, the engine maker, the aviator, and the sportsman. It will follow construction both abroad and in the United States, and present the latest developments in accurate, scientific, and unbiased form. . . . By recording the work of American aeronautical engineering, the world will soon be made aware that the birthplace of the aeroplane is still maintaining its leadership in aeronautics.'"

We have an interesting letter of May 31 from Paul Johnson from which we quote: "... I was greatly pleased to see the very full notes of the Class in the October, 1935, Review. I will now give you some rambling notes of myself, just as they occur to me: We have been down to San Diego in the yacht a couple of times this winter, as I brought the yacht to Southern California in November. From that time until spring we did not use the yacht but the men were busy working on it, painting, and so on, all the time. On one of our trips down to San Diego, Everett N. Curtis and Mrs. Curtis and their daughter were on board to see us at the Coronado Yacht Club. When we came down the coast in November we stopped long enough to see Frank and Mrs. Coombs. . . . We took our cruise to Alaska last summer during the month of July and, having a very good man as second mate, I was not confined to the pilot house as on previous cruises and took about seven reels of moving pictures, some of them in color. I have shown them a number of times at various places

during the winter and spring, some times to rather large audiences. . . .

"My daughter and her husband, Lieutenant John Bates, United States Naval Reserve, and their oldest child, Jackie Bates, were with us on our cruise. Jackie proved to be one of the best fishermen in the party, though he was less than 10 years, catching two or three large salmon and getting a few trout. . . . While in Seattle I called on Arthur C. Lawley who lives in the country a little ways south of Seattle, and spent a pleasant Sunday afternoon with him. . . . I did not get to see Howard J. Benson while in Seattle as he was up in Alaska some place, beyond where I went. . . . For this summer I expect to remain in Southern California most of the time as I find the commodoreship of the Balboa Yacht Club takes a great deal of my time. The yacht is still down here and will remain for the summer and next winter unless I should get one or more charters in which case I would take her up North but return here immediately myself. We will probably desert our house in Altadena for the one at Coast Royal very soon. It is just 11 miles from the Balboa Yacht Club. Tomorrow I am taking the yacht over to Avalon to act as committee boat for the regatta being held there. . . ."

We have to report the deaths of Harry C. Ingalls, Larchmont, N. Y., July 11; Frank B. Heathman, Dayton, Ohio, April 3; George W. Craven, Butte, Mont., July 30. The latter was one of the several college presidents of whom '98 is very proud. We quote from the Montana *Standard* of July 31: "In addition to his Rotarian standing, which was of the highest, Mr. Craven was prominent in other lines. He was regarded as an authority on hydrodynamics, in chemistry, and in other sciences. He was past chairman of the Montana Engineering Society and an active member of the American Institute of Mining and Metallurgical Engineers and also of the Montana Section of the American Institute of Electrical Engineers. He was prominent also in fraternal work. He had been an active worker in Montana Masonic circles and was state grand master from 1934 to 1935.

"Mr. Craven was born April 1, 1871, in Last Chance Gulch, now Helena. His parents, the Rev. and Mrs. Robert Martin Craven of South Carolina, came to Montana in 1868. His father was the first Protestant minister ordained to preach in Montana. . . . After graduating from high school, he entered the M.I.T. from which he was graduated with a B.S. degree in electrical engineering in May, 1898. He was employed for a time in electrification work on the New York, New Haven and Hartford railway between Hull and Braintree, Mass. In August of that year he returned to his native state to take employment with the Boston and Montana Consolidated Copper and Silver Mining Company in Great Falls. Later he went to the Highland Boy Gold Mining Company's smelter at Murray, Utah. He then came back to Montana, arriving in Butte — which has since been his home — on July 7, 1899.

1898 Continued

"On June 30, 1903, he married Miss Marthell Arnold of Butte. They have two children, Dorothy and Eleanor, who live in Washington, D. C. Mr. Craven joined the faculty of the Montana School of Mines in 1905 as an assistant professor of mining engineering. Later he was made a professor of mathematics and mechanics. In 1921 Mr. Craven succeeded to the presidency when the late Dr. C. H. Clapp resigned to become president of Montana State University at Missoula. He continued as president until July 1, 1928, when he was succeeded by Dr. F. A. Thomson. . . .

"Dr. Thomson pays tribute: 'Montana School of Mines deplors the passing of a man who gave the best of his life to this institution. During his term as president, marked additions were made to the physical plant and to the prestige of the institution. Alumni of the institution have always spoken of Mr. Craven as a wise, sympathetic, and helpful instructor.' " — ARTHUR A. BLANCHARD, Secretary, Room 4-160, M.I.T., Cambridge, Mass.

1900

We regret to announce that during the summer Howard Dunbar, II, passed away. He will indeed be missed at our gatherings, as his fine personality endeared him to us all. The Boston *Herald* of May 15 carried the following obituary: ". . . Born in this town on October 9, 1878, the son of Nathaniel W. and Olive Howard Dunbar, and after receiving his early education at the Chauncy Hall School in Boston, he entered M.I.T. and was a member of the Class of 1900. He is survived by: his widow; two daughters, Mrs. John F. Partridge of Cambridge and Mrs. Richard H. Barbour of Milton; two sisters, Mrs. Ridgely Torrence of New York and Miss Jessie Dunbar of Boston; and a brother, Justin Dunbar of Wollaston. He was a trustee of the Howard Seminary of West Bridgewater, which was founded by his great grandfather, Benjamin B. Howard."

The morning's mail included the fall offerings of the scientific publications of the Van Nostrand Company, prominent among these being "Hydrogenation of Organic Substances" by Carleton Ellis. "Starting with a clear account of the principles of hydrogenation catalysis, this book covers systematically the scientific work on the hydrogenation of organic compounds and then presents exhaustively all the details of the industries themselves. As an example of the great importance of these new industries, there is the new method of refining which promises to dominate the entire oil refining industry and to revolutionize much of the equipment now in use."

The Bureau of Yards and Docks regrets to announce the death of Captain Frederick Hosmer Cooke, Civil Engineer Corps, United States Navy, at the Naval Hospital, Chelsea, Mass., August 28. Funeral services were held, August 31 at 10 A.M. in Arlington National Cemetery with full military honors. Honorary pallbearers, all of the Civil Engineering Corps, were:

Rear Admiral N. M. Smith, Captain A. L. Parsons, Captain Ralph Whitman, Captain DeWitt C. Webb, Captain G. A. Duncan, and Commander R. D. Spalding. Captain Cooke was born in Cincinnati, March 11, 1879, attended public schools there, and in 1900 was graduated from M.I.T. with the degree of Bachelor of Science in civil engineering. He was a member of the military order of the Loyal Legion of the United States in succession to his father, and was also a member of the Army and Navy Club of Washington, of the Army and Navy Club of Manila, of the Sigma Alpha Epsilon Fraternity, and of the Alumni Association of the M.I.T. He held membership in the American Society of Civil Engineers. Captain Cooke will be sorely missed by his associates and by many others, of diverse nationalities, who came into contact with him. It can truthfully be said that his friends were myriad. His unusual understanding in all his relations with others, combined with a fine generosity, endeared him to the masses; his wit and humor, combined with his personal dignity, endeared him to his intimates. His industry and thoroughgoing methods in his work, and his vigor of attack of professional problems, gained the admiration of his coworkers. Truly, he was an outstanding, vigorous, and lovable character. Captain Cooke is survived by: his wife, Olga Faure Cooke; his sons, Frederick A. F. and Henry J. H. Cooke; and by his daughter Olga Cooke. A full account of his life and works is given in the personnel notes of the Bureau of Yards and Docks. Captain Thurber, retired, writes in with the news of Captain Cooke's demise and in closing says that: "His passing will be a very great loss to the Navy for he was an unusually capable officer; as a classmate he was loved and esteemed by us all."

George Russell writes: "Here is some real news for you and the rest of the boys. While touring the West this summer I made it a point to dig up Arthur B. White, erstwhile Course I man and now of Riverside, Calif. Of course I don't mean this to be taken literally, for White is very much alive and actively engaged in raising citrous fruits, walnuts, and pecans on his 1,000-acre ranch in that wonderful country. I suppose he would say that it isn't a ranch, but nevertheless it would be if it were in Kansas or Arizona. Finding that I would be in Riverside during my trip, I wrote him from Portland, Ore., and upon my arrival in Los Angeles found an invitation to visit him at his summer villa at Newport Beach, a beautiful resort some 20 miles or more south of Long Beach. Believe me it didn't take the wife and myself long to accept the invitation, and we had a most delightful day with Arthur and his family. Each of us at once declared the other hadn't changed a mite since 1900, so you see we got off to a good start. After that we clicked off the words pretty fast for the next two hours, asking questions and reciting the doings of the past 35 years. It seems that Arthur practiced engineering for some time after going West, at one time being assistant city engineer of Los Angeles. Then the

orange bug bit him and he started in to apply engineering to agriculture. Later he switched to eucalyptus trees, but it was only temporary. Along with oranges he tried his hand at walnut growing and found that it was profitable. Now he is the pecan king of California. He and his charming wife have reared a fine family of five boys and one girl, three of whom were home during our visit. All too rapidly passed the hours and it was with real regret that we said good-bye after extracting a promise that the Whites would attend the 1940 reunion at East Bay Lodge.

"Touching upon my trip, Mrs. Russell and myself left Boston, August 1, and went to Glacier National Park in Montana, thence down the Columbia River to Portland, the City of Roses, visiting the Bonneville Dam and traveling the scenic highway from Portland to Mount Hood. San Francisco was our next stop, and four days were pleasurably spent in this most beautiful city of the West and in charming Oakland and Berkeley. From there we went into the Yosemite and then by auto from San Francisco to Los Angeles, touring the coast towns and stopping at the famous Del Monte in Montecito and at Santa Barbara's incomparable Biltmore. Las Vegas and Boulder Dam came next with the hot ride across the desert and the temperature at 130 degrees. Grand it was, in spite of the heat. Then came lovely Cedar Breaks and Bryce Canyon and the never-to-be-forgotten horseback trip to the canyon floor; the Grand Canyon, Bright Angel and Cape Royal, and finally beautiful Zion. It was hard to pull away from these alluring places, but time was flying and Salt Lake City had to be visited and a dip in its briny lake taken. After that Colorado Springs, Royal Gorge, Pike's Peak, Cripple Creek and Victor with their mines; Denver with its Lookout Mountain and Red Rocks Park; and, finally, Chicago with its everything. It was a wonderful trip, and, to my way of thinking, puts a real punch in that old slogan: "See America First."

Notice from the Register office records the death on July 18 of Myron P. Potter, I, at Cleveland Heights, Ohio. Potter was at the Institute in the years 1896 and 1897. — A letter has been received from the Secretary of the Washington Association of M.I.T. advising of the death of Walter Clark Dean, who passed away on August 16. — C. BURTON COTTING, Secretary, 111 Devonshire Street, Boston, Mass.

1901

The 35th reunion of the Class on June 6 and 7 at the Oyster Harbors Club on Cape Cod was a splendid success, the 43 members who were present constituting one of the largest meetings which we have held since graduation. Brief comments were sent out in September with the annual letter and further remarks are now in order to tell you of those who were there and other interesting details.

Without question I believe it can be stated that everyone liked Oyster Harbors just as much as did those who attended

1901 Continued

our 30th reunion at the same place, and the weather was just as perfect. Lamont duPont was our most gracious host for the two days of the reunion and at the class dinner the members present unanimously and enthusiastically thanked him for his generous hospitality.

Most of us who were present both on Saturday and Sunday indulged in our special brand of golf and, whether or not we turned in satisfactory scores, we thoroughly enjoyed the good-fellowship and the zestful air of one of the finest clubs on Cape Cod. As usual Guy Peterson and Harold Wood turned in fine scores, and the fact that Francis Ouimet, the well-known golfer, was there at the same time probably accounted for the fact that many of us did more pressing than usual in our endeavor to do as well as that star. Bill Sweetser and I played together on Saturday morning and that afternoon Phil Moore and Charlie Record made up a foursome with us, and we continued the same way the next day except that for a time Harold Wood made it a fivesome. Others of the Class made up other foursomes and I wish I could have watched them all so that descriptions of the many extraordinary shots could have been included in these notes.

The Class of 1906 started their 30th reunion at the same place just before us, and it seemed to be the general consensus of opinion, at least among the men of 1901, that we showed our age less than the other Class.

The class dinner and meeting was held on Friday evening and lasted until after midnight, and there was not a dull moment during the proceedings. Jack Scully was our toastmaster and he did a noble job, and in addition to keeping the bunch in order, he made some very appropriate remarks, and also in his usual inimitable style again recited the famous poem entitled, "Casey at the Bat." The class election was held as soon as we had comfortably assimilated our dinners and Lamont duPont was elected President, Joe Evans, Vice-President, and the writer, Secretary.

Following the election, appropriate and sincere comments were made relative to the great loss of the Class in the death of our former Secretary, Allan Winter Rowe, who died December 6, 1934. I know that everybody missed Allan, who was the skipper of the Class from 1921 until the time of his death. We likewise missed Loring Danforth, who helped to make a number of our reunions much more worth while and he would certainly have been at this reunion if he had not been kept at home by serious illness. I am, therefore, most sorry to have to announce now that our good friend Danny died on August 29, and I wish that space permitted the publication with these notes of the splendid article about him which appeared in the *Buffalo Evening News* on August 29. Danny was taken ill in Florida last February and, while he appeared to be on the road to recovery, during the night of August 28 he suffered a stroke which proved fatal. He was president of the John W. Danforth Company of Buffalo and was very highly considered

in that city where for more than 30 years he had been a member of the chamber of commerce and also held many other high honors.

After-dinner talks were made by a number of men who were called upon by the toastmaster in the following order: Bob Williams, our retiring Secretary, made a concise but complete report on the finances and other affairs of the Class and a unanimous and enthusiastic vote of high esteem and appreciation was extended to him by those present for his able attention to the affairs of the Class for so many years prior to the term of Allan Rowe and again since Allan's death. — Phil Moore, among other things, told us how Jack Scully's method of carrying a spear in some amateur theatrical inspired Wrigley to use the word "spear" in connection with his famous gum. — John Boyle recalled to us the fact that Professor Allen '72 was the only professor while we were at Tech who did not have a beard or other hirsute adornment and he also told some other stories which The Review editor might not approve for reproduction in these notes.

Bill Vermilye moved that a committee of three be named by the President to work out ways and means of better holding together the members of the Class or, as he termed it, "to improve the solidarity of the Class." The committee as named consists of Percy Parrock, Chairman, together with Harry Chambers and Bob Williams. — Paul Hilken, who stated his doubt as to whether he should be considered a member of the Class (some difficulty with Harry Tyler '84 of the Institute having caused him to defer his graduation until 1903) made some affectionate comments regarding Allan Rowe, Joe Evans, and others.

Colonel Rash of Kentucky (he explained that he got his title very regularly) made some political comments which were sufficiently in order. Percy Parrock, who was class statistician, made some comments relative to "importance" or "impotence" which sounded interesting, no implication being made that any of those present had as yet, or ever would, reach the latter state. — Bill Newlin, who is now running Amherst College, talked about what we might have done if we were to do it over, and I believe indicated that we were probably pretty well off as we are. He also told some stories and among others referred to the alphabetical departments of the government and made some pertinent remarks about Joe Evans and his PWA. (Joe made a rebuttal later. See below.) Bill also spoke of the splendid spirit of coöperation which he felt really existed in the Class, provided it could be properly coördinated. — Charlie Record paid a special tribute to Allan Rowe, both as our former Secretary and as a splendid amateur sportsman.

Your new Secretary made a few comments regarding his hope to carry on in the footsteps of his illustrious predecessors satisfactorily, and asked that the members of the Class do their part by sending in information for class notes promptly. — Joe Evans, our new Vice-

President, told us how he had very nearly missed the reunion on account of an automobile accident, from which he is still suffering, and stated that if he had paid attention to his doctor he would be in the hospital, his leg still requiring considerable attention. At that point some one interrupted to say that we were glad that he did not listen to his doctor, but that we trusted he would come to no harm because of his dereliction. Joe then gave us a very interesting talk regarding a number of subjects and insisted that, while graft is a regular thing in some parts of the country, it exists to a minimum degree in the PWA. Joe said that he had to come 2,000 miles to attend the reunion, but that it was well worth it and he already looked forward to the next reunion. In answer to a question by Colonel Monaghan, Joe stated that the munition factory which he built for the government during the War manufactured 9,600,000 rounds of ammunition, but that he could not be sure how much of it was actually used in France. Joe stated that he stopped to see Matt Brush on his way through New York, and said that he hoped that at the time of our next reunion Matt's health would allow him to be present.

Lamont duPont, our new President, very appropriately, but briefly, made the last talk and called our attention to the fact that during the 35 years we had been out of Technology there had intervened some 12,775 days, so that if the number of men in the Class had been only 200 (and there were many more than that) there had been at least 2,555,000 opportunities to accomplish something. He suggested, moreover (and we all agreed without voting), that there still remained many opportunities for each of us to accomplish much before our numbers are called. He stated also that he will be anticipating an early report from the solidarity committee, and sincerely believes that something most worth while can be accomplished to help promote and conserve the best interests of our Class.

On Sunday the staff photographer at the club took a chance, and I am sending a copy of the result to The Review (see front section) and list the names of the men who attended the reunion, so that they are in the same order from left to right as shown in the photograph: *Stranding*, Thatcher, Montgomery, Brigham, Taft, Allen (H. V.), Newlin, Farnham, Chandler (L. D.), Allen (G. W.), Chandler (H. T.), Chalmers, Dubois, Wood (H. I.), McGann, Chambers, Wood (H. B.), Monaghan, Weil, Seaver, Stearns; *Middle Row*, Moore, Dow, Evans, duPont, Wight, Gilson, Sweetser, Record, Scully; *Front Row*, Potter, Parrock, Lange, Hilken, Williams, Peterson, Boyle, Rash.

In addition to the 37 shown in the picture and just listed, the other men who attended the reunion, but who either were camera shy or had to be elsewhere at the moment, were: Albiston, Crowell, Foster, Robinson, Tufts, and Vermilye. — Mention was made at the dinner that several members of the Class were prevented from attending because of illness and it was voted that the Secretary write to

1901 Continued

those unable to be present on account of sickness and to express our regrets and our wishes for a speedy recovery. Unfortunately, however, I was not able to secure a list of those so afflicted, but do now take this occasion to send to them for the Class the message given above and our hope to see them at the next reunion.

A motion was made to call the roll by Courses and the following responded: Course I, seven; Course II, 16; Course III, three; Course V, five; Course VI, four; Course IX, one; Course X, four; Course XIII, two; Course XIV, one.

John McGann, Colonel Monaghan, and I roomed together at the club and I am glad to advise that, while we did not waste too much time in sleeping, we thoroughly enjoyed our rooms and all the visitors who honored us by their presence. In fact, I hope that we roommates, as well as every other man who was at this reunion, can repeat the occasion five years from now and that in addition we may be able to induce a lot more of our classmates to join us at that time. If, therefore, you have not already filled out and sent in your class data sheet and check for dues, please help your Secretary to that extent, before other important subjects require your attention. — ROGER W. WIGHT, Secretary, The Travelers Fire Insurance Company, 700 Main Street, Hartford, Conn.

1902

Alumni Day last June marked a distinct advance over the previous year, not only in the general program, but also in the '02 delegation. Ned Baker came again from New York and Tolman and Vatter were also on hand, as well as Robinson from Bridgeport. Bob Baldwin came up from his summer home on Cape Cod and brought a friend, Mr. Gay of the Northern Pacific, as his guest. Proctor came down from the marble hills of Vermont, and Fitch, Moore, Patch, Porter, Adrian Sawyer, Grant Taylor, Doc Williams, Austin Wood, and the Secretary made up the bunch on hand. Eames was also at the Institute, but having had the job wished on to him of streamlining the graduation procession to take place the next morning, had to spend the day toiling hard in his office. Tolman, Fitch, and the Secretary were especially interested in the Class Day functions that formed a part of the day as Lee Tolman, Wendell Fitch, and Alice Hunter were members of the graduating class in Courses IX, X, and V respectively. Wendell Fitch is a chemical engineer with the Goodrich Rubber Company in Akron. Alice Hunter was married just two weeks after Alumni Day to Dr. George E. Kimball of New Britain, Conn., and is living in New York where Dr. Kimball is an instructor in the department of physics at Columbia.

Proctor was receiving congratulations on having joined our increasing roll of grandfathers, Carol Floe having arrived a short time before. The marriage of Peggy Proctor to Mr. Carl F. Floe of Washington State College was noted in The Review last year.

As far as we know Albert A. Haskell, Jr., a senior in the metallurgy option of Course III is the only son of the Class now an undergraduate at the Institute. We shall be glad to hear of any others. Doc Williams' sons are both at Technology — the elder, Robert D. '35 as instructor in mechanical engineering, and his brother, Seaton Williams, as a graduate student in Course III. — Walter S. Fitch's address is 144 Hancock Street, Auburndale, Mass., where he and Mrs. Fitch are in charge of the Walker Missionary Home. Lester Hammond's address is The Highlands, Washington, D. C. — Bourneuf is in the architectural iron business, his address being 95 Trenton Street, Melrose, Mass.

Thomas F. McDonnell died suddenly in Buffalo on the 16th of last April. He was a student in Course IV for the first part of our years at M.I.T. Ever since leaving the Institute, he has been connected with the firm of McDonnell and Sons, Inc., of Buffalo. This firm, founded by his grandfather, does monumental work of high character in all parts of the country and maintains a granite plant in Barre, Vt. McDonnell served in various capacities, being for several years past vice-president and treasurer. He was married to Jean L. Hughes who died in 1918. He is survived by two daughters, the Misses Elizabeth and Jean McDonnell, and one son, John Quincy McDonnell, all of Buffalo. The son is following in his father's footsteps in the monumental business. McDonnell and his son will be remembered by those classmates who were at the outing in 1931 and he wrote in his last letter to the Secretary of his intention to attend the next reunion of the Class.

At the banquet on Alumni Day there was much enthusiasm for our 35-year reunion next June which led to a committee being appointed by Les Millar to make arrangements for this function. Adrian Sawyer is the chairman, with Jason Mixter, Proctor, Place, Cates, Fruit, Montgomery, and Lockett as assistants. Millar and Hunter will serve *ex officio*. We hope to have some definite details to report next month. — FREDERICK H. HUNTER, Secretary, Box 11, West Roxbury, Mass. BURTON G. PHILBRICK, Assistant Secretary, 246 Stuart Street, Boston, Mass.

1903

We are sorry to have to record the passing of two more of the Class: George C. D. Lenth, I, died May 12 in Chicago. The following record and tribute is from the *Monthly Bulletin* of the Municipal Employees Society: "His work following graduation was, for a short time, with the Chicago and North Western Railroad and in the county assessor's office. Later he entered the city service in the bridge division of the department of public works. In 1905 he entered the employ of the board of local improvements as a rodman. The following year he became assistant engineer in the sewer division, and assistant chief sewer engineer. Sewer work and special assessments became his

specialty for the remainder of his life. In the absence of Mr. C. D. Hill during the years 1910 and 1911, Mr. Lenth was appointed engineer of the Board of Local Improvements, serving in that capacity until Mr. Hill's return. During the World War he was engaged in construction work at Camp Knox in Kentucky. In 1921 he was granted leave of absence to take the position of secretary of the Clay Products Association. He was also an important consulting engineer, which included service in that capacity for the city of Chicago on many important projects. He was a member of the subway commission which made plans for a subway in State Street.

"He was also a member of the Municipal Employees Society of Chicago, Chicago Municipal Employees Credit Union, Chicago Engineers Club, Lake Shore Athletic Club, American Ceramic Society, Royal League Club, Western Society of Engineers, American Society of Civil Engineers, and the American Society for Testing Materials. — With all his many outside interests and obligations, he kept in touch with his former associates in the city service, where he had made many friends during his years of service, and continued his membership in the Municipal Employees Society and the Credit Union. His friendliness and diplomacy added to the energy and enthusiasm that he gave to all his undertakings carried him high on the road to success." — Lenth was a well-liked associate among the "Civils" who are all sorry he has gone. We know many of the Class will join in extending sincere sympathy to his widow, two sons, and two daughters.

Charles S. Cole, XIII, died July 16 at his home in Grosse Pointe, Mich. The following information was supplied by the family: "His first five years out of school were spent in the manufacture of radiators until 1909 when he became interested in a steel casting plant in Portland, Ore., but since San Francisco offered a larger field, he opened offices there as sales headquarters for the Columbia Steel Company, whose plant he designed and built at Pittsburg, Calif. Under his management this business prospered greatly, furnishing valves and buckets for gold dredges and material for other heavy industries in the West.

"In 1913 he started a leisurely vacation trip around the world, but soon after his return was a volunteer at a Plattsburg Military Training Camp. At the beginning of this country's entry into the War, he was commissioned a captain and sent to Frankford Arsenal for training. From there he was sent to Alton, Ill., in charge of United States inspection of small arms ammunition. Here he did well-known work in the development of primers, so that after a year he was promoted to the rank of major and put in charge of the district from Boston to the Canadian border with headquarters at Lowell, Mass. At these two places about one half of the small arms ammunition used by this country during the War passed under his inspectors. His interest in military affairs never lagged, so that he became active

1903 Continued

in the interests of the Reserve Officers. Made a lieutenant colonel, he was ordnance officer of the 85th Division, past president of the Michigan Reserve Officers Association, and a member of the Council of National Defense."

Two of the Class received additional honors at the hands of educational institutions. The degree of doctor of science was conferred on F. B. Jewett by Harvard University and on A. A. Potter by Northeastern. We know these honors were well deserved, and we congratulate both men. At the recent Harvard Tercentenary Conference Jewett gave a lecture on "The Social Implications of Scientific Research in Electric Communication."

In June special notices were sent out to all the members of the Class in the Boston area, supplementing the Institute notices about Alumni Day. The attendance at the dinner was somewhat disappointing, however, as only five men appeared: Bradshaw, Danforth, F. B. Jewett, Myron Clark, and F. A. Eustis. — We have tried directly and through Beverstock to get in touch with Newman for the past three years. Recently the Secretary of the Alumni Association has found out that he is now a consulting engineer in Los Angeles, Calif. During the War he held a captaincy in the Engineer Corps, United States Army, from July, 1918, to February, 1920. After the Armistice he remained in service as an instructor in structural engineering at the Engineer School of the Army then held at Camp (now Fort) Humphreys, Va. — We are glad to have him located again after being lost. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 89 Broad Street, Boston, Mass.

1905

By the time you read this, you will have to wait only eight months for our 1937 week-end at Old Lyme, Conn. For, by a unanimous vote, it was decided this year to make these week-end reunions an annual affair at approximately the anniversary of our graduation. Two days of glorious weather in as beautiful a spot as could be found, the companionship of 25 classmates, the talking over of old times, all conspired to make the June week-end this year so full of enjoyment that the decision to "chum it" annually was a perfectly natural conclusion.

From Boston came Charlie Insurance Johnson, II; Arthur Abbott, VI; Bill Ball, III; Henry Buff, III; Grove Marcy, II; Ted Dissel, II; Hub Kenway, II; Charlie Boggs, V; Wesley Gilman, II; Gib Tower, XIII; Harry Donald, III; Andy Fisher, X; Sid Strickland, IV; Chet Shaw, VI; and the Secretary. New York's delegation was smaller, but choice: Bill Motter, III, and Maurice Landers, II, of the old guard; Bill Spalding, III; and our old Class President, Norman Lombard, II, buried for 31 years in business management, inspired — well perhaps — so that the Class might meet the charming bride.

Clarence Gage, II, of Milwaukee finally reached Old Lyme with Mrs. Gage, after a five months' vacation tour through the

South. Apparently there were 26 objectives ahead during this long tour: Old Lyme and about 25 New England fish dinners. Gene Kriegsman, I, was the lone Providence delegate this year, but his oral additions (yea, even auditions) made up for the absence of his old side kicks, Dickerman and Wiggins. C. D. Klahr, II, didn't know he was headed for the old round-up when he left home, but on arrival in New York at the end of a trip he found a telegram from Mrs. Klahr telling him to hunt up Motter, which landed him at Old Lyme, much to his surprise. Ros Davis, XIII, probably because he had so many lads to graduate from Wesleyan at about that time, wasn't able to spend all the time with us, but enough to find out whether his successor was on to the job. Ralph Segar, VI, much improved in health was in from Westerly and assisted in furnishing ballast, stowing provisions, and so on.

Last but not least, was Ray Bell, II, with another pickle boat, the *Yankee*, even more glorious than last year. One of the memorable events of the week-end was an all day trip on Long Island Sound on Ray's boat. A glorious day, a snappy sailing breeze, and a delightful lunch prepared by Mrs. Bell, assisted by Mrs. Lombard, made the trip one to be long remembered, especially the off-course piloting of volunteer helmsmen — Boggs and Ball — and sundry financial disclosures by Lombard.

Saturday evening's chat fest around the fireplace was preceded by a business meeting at which a golden opportunity to elect a new secretary was somehow neglected. Turning from work to refreshment, we listened to a recital of "recent events of my life" in which each member instead told stories from *Ballyhoo, Esquire*, and so on. Andy Fisher's speech on "The Unpopularity of Brains" was occasionally interrupted by boos, or was it booze, furnished by the T.R.A. (Thirst Relief Administration), Ball and Boggs, cochairmen. Ros, as assistant treasurer of a great university, objected, but Grove came to the defense of his country and a great time was had by all.

The baseball enthusiasts, Crowell and Laurence Fuller, and the golf inspiration, Wentworth, being absent, we acted our age in sports, with Buff taking the archery championship, Shaw excelling at croquet, and Tower at quoits. Four strenuous young men played two sets of tennis with Marcy and Kenway wearing the laurels. — The week-end ended officially after dinner on Sunday, or rather adjourned until Friday, June 4, 1937. Lack of space prevents a fuller description. Better get it in person at that time.

At Class Day on Monday, John Ayer, I, was the proudest man on the campus, as his son, John, Jr., was graduated in electrical engineering with the Class of 1936. Since then we have learned that he has entered the signal service of the Pennsylvania Railroad at Chicago. — At Pops Monday evening there were present: Fred Abbott, Arthur Abbott, Babcock, Gammons, Keith, Tebbets, Graesser, Marcy, Boggs, Lombard, Loomis, Car-

hart, Fisher, Goldthwait, and Ralph Whitcomb. Ralph and Mrs. Whitcomb had just returned from London on a visit after an absence of six years. Ralph also reunited with his daughter, Peggy, who had just finished her freshman year at Tech.

Sidelights to the reunion are the following comments, accompanied by regrets. W. H. Blakeman, state budget director of the state of Maryland, wrote: "My regret is the more sincere for the reason that I have been wishing for some time to visit the neighborhood of Saybrook and Old Lyme, where my mother's family originated and where I spent my summers during my childhood" — and we spend our second childhoods! — Roy Allen, now with William Sayles and Son, Albany, N. Y.: "Sorry, but I have averaged over 60 hours per week for the past two months and hope it keeps up." Mitchell Mackie, Milwaukee, Wis.: "Not a Chinaman's chance, but I'll be there next year." Dan Adams, New York City: "Sorry. Previous family plans, but I'll be there next year." Leon G. Morrill, New York City: "Sorry, but I'll be there in 'spirit.'" Leon must have remembered Oyster Harbors. — Jack Flynn, Buenos Aires, Argentina: "Your bid to the '05 week-end rubs salt in my wounds — poor exile that I be — winter just coming on here and you lucky birds enjoying those rare, delightful New England June days!" And we had three of the rarest, Jack. — Frank Webster, Chicago: "I'll be there next year." How's your basketball eye, Frank? Better than your wind, probably. — Bill Tufts: "Sorry — no news — no grandchildren." Better make it next time, Bill, or we'll conclude — no fun. D. H. Nicholson, Lieutenant Commander, United States Navy, Bremerton, Wash.: "Hope to be stationed some day near enough to Boston to attend some '05 reunions. Am leaving here this summer for a three or four years' tour at New Orleans."

Walter Eichler at Ludlow, Mass., took his assignment seriously for he writes: "Just can't make it, but I did drive into Springfield and found H. Lewis Hardy, I. He is in the engineering department of the Boston and Albany Railroad, but duties prevent his attending. George P. Ireland, I, is in poor health and can't make it. Burton E. Geckler, IV, was not at home, but I tried to make a date with his wife." Of course, knowing Walter's natural bashful disposition we know how to interpret this. His own excuse for not going to Old Lyme was that he was trying to sell an estate at Swanzy, N. H. Ike forgot that he gave the same excuse last year. Won't some classmate buy the perfectly beautiful summer home, so Walter can be with us in 1937? — Roy Walker: "Almost thou persuadest me." Well, three other Secretaries have tried it in the past 31 years, and if Roy doesn't show up next year, we'll have to do something stronger. — E. T. Barron, Pittsburgh: "Had it all lined up to attend the 30th in 1935, but I'll make it in 1937 somehow." Just plain regrets with requests to be remembered

to all the boys came from: George Fuller, Walter Brown, Edward C. Smith, C. A. Emerson, Frank Drake, Gilbert, A. A. Roberts, Rhodes, W. A. Taylor, Max Cline, Milton Rubel, Piggy Bartlett, P. G. Hill, H. S. Percival, A. H. Howland, Joe Daniels, Nabstedt, Bob Young, A. T. Hooven, Ted Steel, Lloyd Buell, Howard Edmunds, Loughlin, George Jones, James Rogers, Paul Ralph, Becker, Bob McLean, Dan Harrington, Dave Bridges, Walter Clarke, Damon, Danforth, Lovejoy, Dwight, Laurence Fuller, Hadley, Stevenson, Higgins, Arthur Lord, Ed Poor, Prentiss, Hallet Robbins, Schmeisser, T. Shaw, Dick Senger, Leigh Thompson, W. H. Taylor, R. H. White, Warren, Wyman, Barrier, Burns, Cole, Chesterman, MacBriar, Wentworth, and Wiggins. Some of them sounded very, very sad.

As a sad anticlimax to the reunion, we have to report the death of Theodore A. Dissel, II, which occurred at his home in Winchester, Mass., on September 5. Little did we suspect in enjoying his geniality, his hearty laugh, his jolly anecdotes at Old Lyme that we would never see him again. In talking with Mrs. Dissel since the funeral, however, we learn that Ted had for some time been hiding a knowledge of impaired health under an optimistic carriage. — Frederick H. Andrews, VI, died at his home in South Weymouth, Mass., on August 5. Little information of his later years has been available.

Hub Kenway reports that Ben Lindsly and Mrs. Lindsly spent a day with him in Beverly in August. Ben has shifted from the Petroleum Administrative Board to the Securities and Exchange Commission, 1778 Pennsylvania Avenue, Washington, D. C., where he is technical adviser for the commission on promotions involving oil lands. His present residence is 2807 North Glebe Road, Cherrydale, Va. Ben states also that Alden Merrill with his wife, son, John (who is at the University of Buffalo Law School), and daughter, Eleanor (who is returning for her senior year at Smith), visited Hub.

News from Luther E. Gilmore, X, is not encouraging. An attack of streptococcus laid him low four years ago and he has been attempting a comeback in Florida and New York health resorts since that time. He has returned to the home of his sister, Mrs. A. D. Colby, 51 Waldorf Road, Newton Upper Falls, Mass., and would be glad to see classmates who can run in for a little chat.

Fred Poole, VI, is now with Bigelow, Kent, Willard and Company, Inc., 10 Post Office Square, Boston. We Freds have been playing hide and seek trying to find one another since his arrival, without success. Saw Fred Pirie on the street recently trying to find some one who wanted to build; he reports prospects much better. Andy Fisher has been trying to use the new dinghies at the new M.I.T. Sailing Pavilion on the Charles River for a race between the sons and daughters of '05 and any other class. He just can't seem to find our admirals or commodores, but he has discovered that

membership in the Technology Nautical Association costs only \$5.00 and that this entitles one to lots of nautical treats. Who will volunteer as the '05 commodore? Saw Commodore Bell on Canal Street, Boston, only last week. He talked so long I discovered he was only trying to keep his Boston office force from finding out he was in town.

These new addresses have appeared: George G. Wald, III, 114 East Adams Avenue, Alhambra, Calif.; Clarence E. Gage, II, Snell Isle, Apartment Number 2, St. Petersburg, Fla.; Henry H. Kennedy, Kennedy et Compagnie, 31 Quai de l'Horloge, Paris, France; Commander Robert F. Luce, I, United States Coast and Geodetic Survey, Washington, D. C.; Dr. S. Henry Ayers, VII, Acme Can Company, 1026 West Allegheny Avenue, Philadelphia, Pa. Letters addressed to Albert H. Smith at his previous Chicago address have been returned. Anyone know his present address? — FRED W. GOLDTHWAIT, *Secretary*, 175 High Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 209 Washington Street, Boston, Mass.

1907

At the general Technology gathering last June 8, the following men were present: Charlie Allen, Lawrie Allen, Jim Barker, W. B. Coffin, George Crane, Allan Cullimore, Ralph Hudson, E. W. James, Ed Lee, Alexander Macomber, Ed Moreland, O. L. Peabody, Don Robbins, Ed Squire, and Harold Wonson. The Secretary was unable to attend.

Of course, as indicated in previous announcements, our Class was very much in evidence at this year's Commencement, with Moreland and Robbins being the retiring and incoming presidents of the Alumni Association, respectively; Macomber, chief marshal of Commencement Day; Hudson, chairman of the faculty committee on graduation exercises; James, a speaker at the Transportation Conference; Barker, a member of the Corporation; and Lawrie Allen, a member of a special committee.

Bob Keyes is with the Surface Combustion Corporation, Toledo, Ohio, in just what capacity we have not been able to learn. — Through the courtesy of Carl Trauerman we know that on August 25 R. H. Willcomb of Great Falls, Mont., was elected governor of Montana district of Kiwanis International. Carl himself is continuously active in finance, mining, politics, and general business in Montana. Last July he was reelected president of the Mining Association of Montana.

Only eight months till June, 1937! Remember our 30th reunion at Oyster Harbors Club, Osterville, Mass., on June 5, 6, 7. — BRYANT NICHOLS, *Secretary*, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

As we start another year your Secretary finds himself at some distance from Boston, being located temporarily at Dan-

ville, Va., while engaged on a hydroelectric development for the city. The job is an interesting one, having a head of nearly 700 feet and being located in the Blue Ridge Mountains about 80 miles west of Danville. The surrounding country is beautiful and to a Northerner there are many things of interest. Although away from home, I shall try to keep up my monthly chronicles of 1909 news. A letter to my Boston office will be forwarded to me.

I was sorry to have missed Alumni Day last June, but Art Shaw kindly sent me a list of those present: John Davis, Royce Gilbert, Bill Jones, Mark Kelley, Francis Loud, Art Shaw, Chick Shaw, and Henry Spencer. — Carl Gram was also out of town, being at the time in London, England, on business. Early in September Carl was back in Boston, but he will return to England some time this fall, remaining there several months. — Late in June I had a letter from J. N. Stephenson, who writes that he has been engaged in editing a five-volume treatise on the manufacture of pulp and paper. This includes two preliminary volumes on prerequisite mathematics and science required by some correspondence course students before they take up the complete technology of pulp and paper processes and equipment covered in the other three volumes. The book first appeared in 1921-1924, was revised in 1928, and is now being revised again. Volume 3 is in the printer's hands (McGraw-Hill) and Volumes 4 and 5 are in process. More than 25,000 copies have been sold.

Mr. and Mrs. John A. Willard announce the marriage of their daughter, Virginia, to Mr. Nathan Henry Wentworth on Saturday, the 22d of August, at Duxbury, Mass. — Lewis Johnson's daughter, Elizabeth, was the valedictorian of her class at Maryland College for Women.

From Paul Wiswall also comes the following: "On Saturday, July 11, Ridsdale Ellis had open house for the Class on his yacht, *Marianna*. We sailed from Port Washington on an all-day cruise just when the thermometers in New York were breaking records. But where we were, the city might have been a thousand miles away and hot summer was tempered by cool, fresh breezes from Long Island Sound. Dale is a good sailor, a good navigator, a good cook and provider, and a good host. Mrs. Trevithick sent some meat pies that Harry said were pasties. Your scribe will not argue about the name, but I can tell you that a Trevithick pastie laved with some cold beer on the Ellis sloop afloat in Long Island Sound is something to tell the world about. Let King, arriving with his duffel bag and donning a deep-sea rig, lent the proper nautical flavor for us other landlubbers. Larry Forrest admitted that he had not had so much fun for ages. An exceptional party, if you please! Have I told you that Ellis is just having his book on licenses and royalties published? He tells us that it will be a 600-page treatise on a phase of the law that he has been working on for several years."

1909 Continued

Tom Desmond has been very much in the New York papers this summer, being mentioned on many occasions as a possible candidate for governor of New York on the Republican ticket. It is my understanding, however, that Tom is seeking his reelection as state senator from Orange County. On August 1 there was an informal gathering of some 800 Republicans of Orange and Sullivan counties at the home of Tom and Mrs. Desmond at Newburgh. Following a buffet luncheon on the lawn in back of the house, the political situation was discussed by speakers of note. The New York *Herald Tribune*, Sunday, September 27, wrote of Tom: "Senator Desmond is not only peculiarly fitted to lead the party in the campaign to victory, but he is especially capable, by nature and by training, to occupy the governor's chair—a consideration that demands attention beyond the mere mechanics of getting elected, as important as that is. He has gained a reputation far beyond his own district, whose two counties contain nearly 170,000 persons. He has been no provincial, satisfied to intrench himself 'back home.' He has made exhaustive study of the whole structure of state government and knows it as intimately as the minority leader of the Senate. . . ."

Ed Merrill, former President of the Washington Rapid Transit Company which merged last summer with the Capitol Transit Company, Washington, D. C., has been elected vice-president and general manager of the latter company. Following graduation Merrill was employed by the Union Pacific Railroad until 1913, when he went with the Puget Sound Traction, Light and Power Company, becoming traffic engineer of that company. Later he was with the Milwaukee Electric Railway and Light Company, and from 1920 to 1922 with the Philadelphia Rapid Transit Company as traffic engineer and assistant superintendent of transportation. In 1923 he went with the Cincinnati Street Railway and in 1924 with the Chicago Motor Coach Company and Yellow Coach Manufacturing Company. Since 1926 he has been with the Washington Rapid Transit Company.

An interesting account of Charlie Belden's 2,000-mile airplane trip from his ranch near Cody, Wyo., to the Newark Airport with 16 two months' old antelopes appeared recently in the New York *Times*. Six of the antelopes were taken to the Bronx Zoo, while others were to go to Germany on the airship, *Hindenburg*. Starting out with 23 animals, two were taken off at Chicago, two at Philadelphia, and three at Washington, D. C. Charlie still wears his 10-gallon Stetson. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

1910

At the Alumni Dinner in June the following members of the Class were present: Lawrence B. Chapman, Karl D.

Fernstrom, and J. B. Babcock, who are professors at the Institute; also C. W. Wallour, James G. Tripp, and your Secretary. — This was Jim Tripp's first return to the Institute since graduation. He has had a varied career in the heavy construction business and is now vice-president of Merritt, Chapman and Scott of New York City. — Your Secretary met Walter Spalding in the dining car on his way to New York during the summer. Walt is in the building contracting business and was figuring a job in East Bridgewater, Mass.

William B. Hargraves has summarized his doings from 1930 to date as follows: He spent the winter of 1930-1931 in Lubec, Maine, with his parents, and then in the spring of 1931 went back to Seattle, Wash., but found nothing to do until the summer of 1932 which he spent prospecting in the Republic district of eastern Washington, but without any success. In the fall of 1932 he decided that a winter in a warmer climate appealed to him, so he and his family headed for San Diego, Calif. He stopped off at Los Angeles to say "hello" to Breyer, Joslin, Warren and any others of his old gang of classmates that he could find. He also located B. C. Huber, who insisted that Hargraves spend the winter with him. The result was that through Huber, Hargraves enlarged his acquaintance and in June of 1934 went to work for the United States Forest Service in the Angeles forest in charge of work camps and supervising road and dam construction. This job lasted until August, 1936, when funds ran out, and after a few days' lapse the Forest Service requested him to come to the Kings River Camp at Sanger, Calif., which is located in the Sierra forests. He has charge of two WPA construction camps.

Paul S. Hopkins, who is head of the Shanghai Power Company, reports that the electrical load continues to grow and his company is prospering with the recent stimulus to industrialization and mechanization of industries. He gives employment to a number of Chinese who are graduates of Technology and altogether employs 200 foreign engineers and over 2,500 Chinese. He made a trip to the United States a year ago, spending a couple of weeks in New York and some time with his family who were summering in Gloucester, Mass. This was followed by two months riding the mountains of Montana, Wyoming, and Idaho with his wife and two boys. He went to Europe a year ago last September, expecting to return and spend December and January in and around Boston, but America's silver policy created problems in China which necessitated his early return there at the end of the year, so that he was unable to carry out his plans of seeing his old friends in New England.

The following excerpt is from one of the June issues of the Boston *Herald*: "Colonel Henry A. Hale of Boston, commanding officer of the 376th infantry (reserve), sails today on a business trip to London and Paris during which he will formally present to King Edward VIII at London an engraved notification of his

recent election as an honorary member of the Ancient and Honorable Artillery Company. The presentation is arranged through the Honourable Company of London."

The Class is now represented on the Departmental Visiting Committees by Lewis W. Waters in the Department of Biology and Public Health and Gordon G. Holbrook in the Department of Naval Architecture and Marine Engineering. — For the second time, the Class records a new member in the "grandfather class": Hal Billings announces that he is a grandfather to Dexter Billings Godsoe. Harold is now busy on a good sized contract for the new Armour Building in Boston.

The following changes of address have been received: Herbert E. Fowler, 37 Vick Park "A," Rochester, N. Y.; Tom W. Saul, 2003 Tenth Avenue, Northeast, Portland, Ore.; William B. Hargraves, 820 Monterey Avenue, Monrovia, Calif.; Van Court Warren, 123 Aeolia Avenue, Auburn, Placer County, Calif.; and Andrew L. Fabens, 129 West Henrietta Street, Wooster, Ohio. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

1911

If you were there you'll never forget it; if you missed it you'll ever regret it; after reading Jim Duffy's log of our Silver Anniversary Reunion the truth of these facts becomes apparent. Returning to Mayflower Hotel at Manomet Point, Plymouth, we were just as royally treated by Charlie Dooley and his wife as we were in 1921 and we reached the high-water mark of reunion attendance: 94. Yes, Sir, there were 53 classmates, 30 wives, eight children, one niece, and two guests: President and Mrs. Compton of the Institute.

Before going any more into details your Secretary wishes to express again his sincere appreciation of the bountiful purse of silver presented as a token of a quarter century as Class Secretary. Don Stevens did a peach of a job in the building up and actual presentation of the purse, dollar by dollar, at varying speeds and from various angles these silver cartwheels appearing, to be caught (or picked up) by a surprised Dennie — showmanship by Don worthy of Hollywood.

Arriving at Plymouth Friday afternoon, June 5, on a fine, sunshiny day, we had glorious weather throughout the time there and for Monday at the Institute for Alumni Day. Friday evening after a fine shore dinner we gathered in the lounge around a cheery fireplace, spun our individual yarns for the benefit of all present, and finally had a good old sing fest. Next day there was golf for many, fishing for some, cards for others, swimming in the pool, and so on, and right after lunch out of the sky came Monk de Florez in his own Fairchild plane, having flown up from Stamford, Conn. After he had some lunch and did some reminiscing he dramatically took his departure with stunt flying of high

1911 Continued

caliber. That evening after dinner we had the silver shower referred to in the second paragraph, presented the ladies with electric clocks with sterling silver plates inscribed "M.I.T. 1911," distributed souvenirs provided by Socony Bob Haslam, looked at movies of our 1931 reunion at Dennie's Douglas Hill Inn and some movies brought by Ralph Runels showing the flood damage in New England this spring, and then adjourned to the lounge again where we had an orchestra for dancing. We "climaxed" the evening with a singing postlude.

There were also present at Mayflower Hotel some members of the Class of 1931 for their five-year reunion and they challenged us to a game of ball Sunday morning and they beat us 19 to 11 — a significant score, perchance. Just as the ball game was concluding Dr. and Mrs. Compton arrived and stayed to dinner with us, being forced to leave shortly thereafter to get back to Trinity Church, Boston, for the Baccalaureate. All enjoyed them both immensely. We had planned to have a marshmallow roast on the beach in the evening, but a fog set in and we stayed indoors, having a fine time playing bridge, swapping experiences, and again singing the old and new songs.

Most of those at the reunion spent Monday at the Institute for Alumni Day, and our Class provided the welcome to the graduating class — our silver quartet in the garb of Roman soldiers consisting of Don Stevens, our senior President; Ted Parker, our first marshal at graduation; your Secretary, who was second marshal at graduation; and Jack Herlihy, our Assistant Class Secretary. That evening there was a fine representation at the 1911 table at the Pops.

At the reunion the following 30 men were there with their wives: Ernest Batty, Jim Campbell (and his charming bride, no less!), Obie Clark, Marshall Comstock, Paul Cushman, Norm Duffett, Jim Duffy, Sterling Dyer, George Estes, Don Frazier, Joe Fuller, Tom Haines, Joe Harrington, Stan Hartshorn, Milt Hayman, Jack Herlihy, Charlie Linehan, Roger Loud, Roy MacPherson, Bob Morse, Ted Parker, Chet Pepper, Carl Richmond, Selly Seligman, O. W. Stewart, Harry Tisdale, Thorne Wheeler, Zeke Williams, Al Wilson, and Alec Yereance. The stags included: George Cummings, Harold Davis, Monk de Florez, Dennie Denison, Minot Dennett, Clarence Dow, Ken Faunce, Dick Gould, Charlie Hobson, Art Leary, Charlie McManus, Fat Merrill, Clayton Robinson, Ralph Runels, Johnnie Scoville, Sam Scribner, Nat Seeley, Don Stevens, Ed Vose, Emmons Whitcomb, Gordon Wilkes, Bun Wilson, and Zim Zimmerman. These children attended: Baby Marian Linehan and Charlie's niece, Miss Smith; Oswald, 3d, Pearson, David, and Reed Stewart; Misses Dorothy and Jean Wheeler; and Miss Jean Yereance. Bill Coburn, George Cowee, and Fat Cushman joined us at Technology on Monday. (See front for reunion picture.)

Our Class was honored at this year's Technology commencement when one of two Architectural Department medals presented went to Louis Bemis Wetmore '36, son of Louis L. Wetmore of Glens Falls, N. Y. Lou, Sr., had hoped to get on here in time to get to Tech night at the Pops, but was unfortunately delayed just long enough to miss that event. Frank Parker, Ted's fine boy, received his degree this year in architectural engineering.

In November, 1935, the Probate Court of Suffolk County granted Suren Bogdasarian's petition for a change in his name to Suren Stevens. Last Spring he received an appointment as resident engineer inspector for PWA projects in Boston and vicinity. He found he was too busy on this to attend the reunion, but on June 23 he found time to marry Miss Artemis Tovmassian at Mount Vernon Church, Boston. Mr. and Mrs. Stevens are now at home at 37 Hopedale Street, Allston, Mass. Congratulations!

In the Lowell (Mass.) *Courier Citizen* of July 7 appears a fine tribute to the work of Ralph Runels, now superintendent of the water department of that city. The story says in part: "It's practically impossible — certainly impractical — to list the number of fine buildings which the R. E. Runels Construction Company has erected. On that list would be many of the outstanding buildings of this section, but one of the finest examples of Runels Construction work is the building in which this newspaper has been prepared for its readers. . . . The head of the company, Ralph E. Runels, M.I.T. 1911, comes from a 'building family,' his grandfather building the Runels Building here and his father also being engaged in the building business. During the recent flood this company completed work on the Central Street bridge so rapidly that it still stands as a record of bridge construction."

Ted Van Tassel came East from Peoria late this summer, but as luck would have it I was away from the hotel when he and his family went through *en route* both to and from Newtonville so I didn't see them. He and Lloyd Cooley both deeply regretted they could not attend the reunion (and some of the boys would like to have had them there with Hiram Walker).

Kanezo Goto, our retired Japanese admiral, wrote a letter of regret at being unable to attend the reunion, which was read at the Saturday night party at Mayflower Hotel: "To you and other friends in the Class who may remember me, it may be of some interest that since retiring from the Japanese Navy, I have entered business as the president of Nihon Dempa K. K. (Japan Electric Wave Company), manufacturer of wireless equipments, and also act in an advisory capacity to the Ryobi Denki Shokai, sole agents for Westinghouse in Japan. My regrets at nonattendance and regards and greetings to all in 1911." Goto is also vice-president of the Technology Association of Japan. Don Stevens also read a letter and showed some pictures he received from Goto.

Henry Dolliver was in Spartanburg, S. C., for Jackson and Moreland of Boston from late May through mid-August and thus had to miss the reunion, while Dick Ranger was kept at home in Newark by work on an additional installation of one of his electric chimes. Dick sent a "canned" message by Don Stevens, which was a corker and delighted every one at the reunion. Walter Wilson of the Andrew Wilson Company, Lawrence, Mass., was unable to get to Plymouth but wrote: "I am still on the job as usual — nothing spectacular, but I'm not complaining. Still have the same business and same family as at the last reunion, but said family is creeping up on the 'old man'; my daughter has just finished her freshman year at Connecticut College and my son graduates this month from high school. He will probably go for a year to Phillips Academy here at Andover and from there to college. That's the Wilson family up to date."

Winthrop P. Haynes, XII, has returned from London, England, and is now living at "Elmlea," Boxford, Mass. George Forristall, II, has reorganized his business and it is now known as Retail Sales Promotion Service with offices at 703 Kilby Building, Houston, Texas. The Providence *Evening Bulletin* of August 31 said: "J. Burleigh Cheney, WPA administrator since July of last year, today sprang a surprise at noon by announcing his resignation, effective September 15. It is occasioned, he said, by his desire to return to private business." No word from Burleigh yet as to his new plans.

The Baltimore *Sun* recently ran a fine tribute to Ban Hill, I, President of the Baltimore Transit Company, entitled "The Transit Company's Number 1 Man" and with a subcaption "Like His Predecessor Bancroft Hill Rides the Street Cars." In the Baltimore *American*, also recently, was a thumb-nail sketch of Ban's career, which said: "He's a young man for so important a job; smokes cigars; has a hearty sense of humor; likes to study statistics; keeps an engineer's slide rule on his desk; in the basement of his Mount Washington home has a complete woodworking shop."

Paul Kellogg, formerly with Stevenson, Jordan and Harrison in New York City has joined, and is a partner in, a new subsidiary of said company: Stevenson and Kellogg, Ltd., Management Engineers, 970 Sun Life Building, Montreal. "At the present time we are serving only one client," Paul writes, "and that is the Newsprint Association of Canada. You certainly must have had a wonderful time at the reunion, judging from all reports, and Mrs. Kellogg and I are so sorry we had to miss it. However, there will be another one and even though it be the 50th we shall endeavour to get back."

Saw a clipping recently of a fire in a coal shed and adjoining building in my home town of Framingham, and it turned out to be the experimental lab of Roy MacPherson, where for the past two-and-a-half years he has been carrying on experiments on high-efficiency fuels.

1911 Continued

In reply to an expression of sympathy in his loss, Roy said: "The fire started while Ina and I were on a cruise in our ketch and I arrived home in time to look at the smoking ashes. The loss was complete, as all the men were away for the Labor Day holiday week-end, and was only partially covered by insurance, to say nothing of the three years of hard work and worry that had gone into it." — ORVILLE B. DENISON, *Secretary*, Hotel Bancroft, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

W. H. Triplett, III, who is chief mining engineer of exploration work with the Peñoles Company, with headquarters at Monterrey, spent last spring on the west coast of Mexico for his company. — Best wishes to Frederick A. Robinson, Jr., X, who was married to Gertrude Pauline Carroll in July.

Milton Kahn, X, has been named chairman of the Associated Jewish Philanthropies in their coming campaign. The Boston *Herald* goes on to say that Mr. Kahn is widely known through his association with Jewish philanthropies. He is a former chairman of the Business Men's Council and campaign vice-chairman. He is a member of the board of trustees of the Associated Jewish Philanthropies and a director of the following constituent societies: Beth Israel Hospital, Jewish Family Welfare Association, and Jewish Child Welfare Association.

It is with deep regret we announce the death of F. Haven Clark, VI, who died on July 12 at his summer residence at Nahant, Mass., after a long illness. Clark was a member of the firm of Scudder, Stevens and Clark, investment counselors. At the time of his death, Clark was vice-commander of the Eastern Yacht Club, owning one of the fastest racing schooners on this part of the coast.

It is hoped that announcement can soon be made as regards general and district chairmen for our 25th reunion, which is now only eight months away. Will anybody who has any suggestions to make regarding time, place, or anything else, drop a line to Ship or Mac. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N. Y.

1913

After an absence of some 13 years, I am happy to resume the diversion of writing the class notes. Perhaps it would be well to explain my reappearance. I have spent the last 12 years making cotton webbing in the state of South Carolina. I found the South an interesting country with some distinct advantages in certain textiles, including my own. However, I succumbed this year to a yearning to return to New England. I am operating, in Pawtucket, R. I., a small factory for the weaving of ladder tape for Venetian blinds under the "nom de loom," Murdock Webbing Company.

In Providence and vicinity I have encountered several classmates: Bill Eichorn is connected with a local worsted mill; Harry Thierfelder is in the Providence office of the State Department of Public Roads; Charles Trull, bachelor, is an engineer with the Blackstone Valley Gas and Electric Company; and finally, Harry Peck, the erstwhile firebrand, has offices in Providence. Hap is a counselor at patent law. He is still the very critical and at times vituperative lad of years ago.

Our class attendance at Alumni Day in June was small. At dinner in Symphony Hall we had Messrs. Brewster, Ready, Horsch, MacKinnon, Townsend, Mattson, Macdonald, Jim Beale, Haynes, Murdock, and Mrs. Effie MacDonald Norton. Bill Brewster is an able and progressive executive with the old, established, and large Plymouth Cordage Company. Bill kindly escorted me through the plant in the summer of 1934, and I was impressed with what I observed in the line of ingenuity and efficiency. Bill's oldest boy is a sophomore at the Institute this year. Pa Ready is a prosperous shovel manufacturer, whose product is in high favor with the omnivorous WPA workers. Horsch is a chemist in New Jersey. Both MacKinnon and Townsend are fixtures at the Institute where Joe is the second generation, rather bald registrar and Arthur is professor of machine design. Bill Mattson is an officer of the American Locker Company of Boston. It is his aluminum-painted product which you see in prominent locations at railway and bus terminals. It's a slot machine racket in which you deposit a dime for the privilege of storing your luggage. Bill didn't explain all of the conditions to me, but you can probably read them, in fine print, on the face of his locker doors. Gene Macdonald is a bridge engineer, a seasoned one of long experience. He devotes much of his time to selling the designs of his New York company, and his work takes him around the eastern half of the country. I presume that Gene is a natural enemy of drought and a friend of floods. Ray Haynes is still the meticulous gentleman, in the brokerage business in New York. Jim Beale was so busy at his task of mine host at our table that I was forced to question Haynes about Jim's activities in search for livelihood. Ray explained that Jim is with a Boston financial house, Stone, Webster and Blodgett, I believe, and that Jim does consort and hold great traffic with the intrenched rich. It is nice to say, and it's true, that the youngest looking classmate at our table was Mrs. Norton.

It is with deepest regret that I have to report the passing of James C. Goff. If I ever saw one, Jake was a man's man. I had the good fortune to spend an hour with him in Pittsburgh, his home city, in the spring of 1934. He was an executive with Scully Steel Products Company, and from steel men since I have learned that he was well known and liked. At the time of our meeting, Jake, a bachelor, seemed his old self, and news of his death, early this year, was a shock.

The Alumni office reports changes in address: John P. Coe, X, to Naugatuck Chemical Company, 1790 Broadway, New York, N. Y., from Naugatuck, Conn.; Rhys H. North, IV, to Oxford, Maine, from Washington, D. C.; and Lieutenant Paul C. Warner, IV, to Naval Air Station, San Diego, from Buffalo, N. Y. Alas, poor class spirit, I knew him well. In my early days as Class Secretary, I had the misfortune to omit notes for one issue of *The Review* — only one — mind you. The mails never carried fouler invective than that contained in letters to me from Harry D. Peck, *et al.* I don't remember the names covered by this *et al.* And where was said Peck at our Alumni Dinner, only a few miles from his residence? Seriously, I'd like to make these notes worth reading. I beseech your support in the form of news. — FREDERICK D. MURDOCK, *Secretary*, 234 President Avenue, Providence, R. I.

1914

With the fall now so well upon us it looks almost as near to next Alumni Day as looking back to June 8 of this year. The weather was ideal for the occasion — a bright sun and a perfect sailing breeze. As would be expected, '14 had one of the largest delegations. We followed the program around the clock, even tiptoeing down to the head table in the evening to put on a "typical M.I.T. cheer" for the benefit of the radio listeners. While the whole Alumni Day idea is new at Technology, it appears to be working out well, and with the experience gained from year to year it should develop into one of Technology's pleasantest traditions.

Those attending this year were: Aldrich, Chatfield, Corney, Crittenden, Crocker, Dorrance, Fales, Fiske, Gazarian, L. S. Hall, Hamilton, Hanson, W. G. Hauser, Henriksen, Lucas, MacKenzie, Morrison, Perley, Richmond, Tallman, C. H. Wilkins, and H. S. Wilkins. In addition, we were joined in the evening by Professors Millard and Keyes.

Are we getting old? Well, two of our number already have sons at Technology. Crittenden has a boy entering this year, and L. S. Hall's boy is already a sophomore. Incidentally, Crittenden held the long-distance attendance record on Alumni Day by coming up from Shreveport, La.

In connection with the Harvard Tercentenary H. A. Affel spent the first part of September in Cambridge. He headed a group who arranged several interesting telephone demonstrations in connection with Dr. Jewett's address. — Several of our Class have had the misfortune to have spent most of the past summer under doctors' care. Norm MacLeod spent over two months at the Massachusetts General Hospital because of a spinal operation. This was particularly hard on Mac, because this year he is president of the Machine Tool Association. At last reports, however, Mac was feeling fine again, but not quite able to try the golf clubs. — Porter Adams, too, has had to limit his summer activities, but expects to return to Norwich University for at

1914 Continued

least most of the current academic year. — Perhaps it was too much Alumni Day, or perhaps just one of those things, but shortly after attending Alumni Day, Walter Hauser was taken ill and has been laid up most of the summer. He, too, is now greatly improved. When we start plans for our 25th reunion it would seem as if we should give plenty of thought to easy chairs instead of baseball.

Now to something more cheerful! The last line of defense is fast crumbling, and last winter when Harold Wilkins deserted the bachelors' club that organization decided to disband. As evidence of this, let congratulations be extended to Bob Parsons, whose engagement to Miss Marjorie Smithwick of Cambridge was announced this summer. It really would not be surprising to hear one of these bright days that Stanyan, too, had been going calling evenings.

C. F. Thompson, who has been manager of the El Paso branch of the Mine and Smelters Supply Company for many years, has been transferred to the Denver headquarters. This change was made necessary by the increased activity in gold and silver mining, which required the building up of the personnel of the main Denver office. — One of the candid camera pictures taken at the Pasadena Convention of the Institute of Electrical Engineers showed C. W. Ricker with his usual beaming smile. Rick is chairman of the New Orleans section of that organization. — Hardly a day passes without some note appearing in the daily press regarding the progress of the Douglas Aircraft Company, of which Don Douglas is president. It was, therefore, particularly appropriate that he should receive this year's Collier Trophy Award.

The citation reads: "This airplane, by reason of its high speed, economy, and quiet passenger comfort, has been generally accepted by transport lines throughout the United States. Its merit has been further recognized by its adoption abroad and its influence on foreign design is already apparent. In making this award recognition is given to the technical and production personnel of the Douglas organization."

Bob Patten of Chicago and Gus Miller, formerly of Chicago but now of New York, were among several classmates who called on your Secretary while they were vacationing in New England this summer. — From one of the New York men, whose name your Secretary unfortunately neglected to note on the clipping, there was sent in a most interesting newspaper article on the work that Mrs. Richey, the wife of Commander Richey of our Class, has done in restoring historic flags of the country. The article told of the real science and artistry required in this work and designated Mrs. Richey as the country's outstanding authority on the subject. — HAROLD B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N. Y.

1915

We opened the summer season with a delightful meeting on June 8 preceding the Alumni Dinner. The Class's invitation brought out the following: Henry Sheils, Wayne Bradley, Wally Pike, Lloyd Chellman, Barney Landers, Easty Weaver, Seward Highley, Royal Wetherald, Frank Murphy, Frank Scully, Weare Howlett, Whit Brown, Marshall Dalton, Joe Livermore, Bertram Adams, Chet Runels, Harry Murphy, Pete Munn, Reggie Foster, Speed Swift, Bill Brackett, Fred Waters, Bridegroom Rooney, Archie Morrison, Max Woythaler, Fannie Freeman, Jac Sindler, San Willis, Abe Hamburg, and Azel Mack. Al Wechsler, a friend of our gang, was a very agreeable guest.

This list of names brings back many familiar friendships and among the gang were chaps we hadn't seen for many years. I hope they will remember the party, support the Class, and come to our dinners regularly. We were having such a good time at our own party that only our intense loyalty tore us away to go to the big dinner. It was there that 1915 reached the heights of its enjoyment and popularity; in fact, our table was the center of much interest and through our generosity we were called on to be hosts to many visiting Alumni. Fortunately, or unfortunately, for us, we sat next to '16, to whom sympathy is due for being sandwiched between two such glorious classes as '15 and '17. In their blind beggars 20th-reunion costumes, they wrung pity from us and we filled their tin cups to overflowing. We had an enjoyable evening and undoubtedly had the most conspicuous table.

In Worcester recently I called to see Dennie '11, than whom there is no "than whomer" as an active Class Secretary and loyal alumnus. Dennie told me about their 25th reunion and gave me some advice which we can use in 1940 (Oh, my!).

Gene Place is with the American Mutual Liability Insurance Company in Boston. When he called to see me I was out, so he left his card telling me I could go to the hot place where bad little boys are consigned. Nice of Gene, wasn't it? — An elaborate, descriptive folder, full of photographs and figures, tells how Bill Holway was the consulting engineer for the city of Fort Smith, Ark., on the Clear Creek Water Project built in 1936. Our boys do get along. — Jim Tobey, from his Borden Company office in New York City, writes that he soon will be publishing two small books. Jim has written a number of articles for trade papers.

The Secretary is always willing and ready to be corrected. Vik Enebuske writes as follows: "In The Review of May, 1936, you published a letter of mine, slightly altered, which I have read and I noted your comment at the conclusion. I was not in Bellevue Hospital as a result of any war injuries, and while I was overseas in the observation balloon service during the World War, I returned in good health and am still in such condition. . . ."

THE TECHNOLOGY REVIEW

John Hyneman, I, after years of silence, writes that he is with TVA, 511 Union Building, Knoxville, Tenn. — The July, 1936, issue of the *American Paper Merchant* carries the following story about the appointment of Charlie Paine as the new general manager of the Eastern Manufacturing Company, Bangor, Maine. I saw Charlie some time ago and know that he is very modest, so it's a pleasure to send him our best wishes for success and achievement. "The directors of the Eastern Manufacturing Company, Bangor, Maine, at a meeting, June 16, appointed as general manager Charles G. Paine, who has been a member of the Eastern organization for 20 years and its assistant general manager for the past six years. The choice was unanimous, the directors feeling that Mr. Paine has given able and untiring service, winning the confidence of other executives and the trust and respect of all employees. Mr. Paine, who begins his new and increased duties immediately, was born in Dover, Mass., in 1891. After completing his high school studies he took a special technology course in Chauncy Hall Preparatory School in Boston, then entered M.I.T., from which he was graduated in the Class of 1915.

"Joining the staff of the Eastern Manufacturing Company in 1916, he was first assigned to the Katahdin division at Lincoln as mechanical engineer. His service record there attracted the attention of the company's executives, and he was advanced to mechanical superintendent. In 1918 he was called to the Eastern plant in South Brewer to aid in its mechanical development, and he was made its general mechanical superintendent in 1920.

"He continued in this position ten years. His quiet efficiency and his knowledge of almost innumerable details in an intricate and extensive business were recognized throughout the organization, and there was general satisfaction when, in 1930, he was promoted to assistant general manager. He now, with the position of vice-president and general manager, assumes direction of the properties in South Brewer and Lincoln."

When our cocktail party on Alumni Day was announced as a stag party, Max Woythaler in Framingham wrote: "O.K. to bring a deer to the stag?" Some fawn, eh Max?

The Secretary's burden is eased and his life is cheered by such a humorous letter from such a picturesque personality as St. Elmo Piza. He needs no introduction to you classmates; you simply have to recall him from the recent reunions. St. Elmo and I have been close friends for so long, closer by virtue of our being in the select group of the few remaining bachelors in the Class, that it pains me selfishly not to be able to give you his full letter, as some of its details would hardly be passed by The Review censors. Recalling the nature of St. Elmo's stories at the reunions and his proclivities, you can appreciate the extremely humorous, though ribald, nature of these delerions. "Some day I am going to write a long,

1915 Continued

uninteresting book upon seasonal influences upon human behaviorism, which I hope you will not read. But before I write it, I shall try to find out why it is invariably in the month of August, and no other, that I find myself sitting down to apologize to my few remaining friends for all the letters I have not written them since the previous August. No obvious explanation suffices for this phenomenon, for if news is scant during the other 11 months, it is nonexistent at this period of the solar orbit, and the mind, always sluggish, achieves in this period its most perfect static equilibrium.

"But if we must be businesslike, yours dated January 1 is before me, and a very nice yours it was. That moment found me relatively busy, helping out on a quarter-million dollar residence job of which a friend was the architect. It was stimulating and pleasant work and it restored my much needed confidence as well as, to a lesser degree, the even more urgently needed bank balance. But it was reassuring to realize that somebody in this world was spending United States currency for something to live in and that in five years the old hand had not lost all its skill. The job took all my time for five months, and that, with teaching at night, kept me about as busy as I care to be. But it wound up the end of May, as did also the school year, so that from June until the present I have vegetated in a state of nonproductivity that makes the life of the hippo in the zoo seem by comparison a whirl of breathless activity.

"Several irons I had in the fire have thus far refused to get even slightly warm. Last summer was one of the pleasantest I can remember, bringing three small alteration jobs on summer homes in different parts of the country. I did each on the site, as the guest of my respective clients, sandwiching the drawing between the drinking and the driving. Covering territory from Vermont to Virginia, I spent exactly three weeks of the summer in New York. . . ."

We were all glad to see Virgil E. Wardwell at the 20th reunion at Saybrook. Here's another engineer strayed from the paths of science. In answer to my letter, he wrote from The Hay System, Inc., 30 Fifth Avenue, New York City: "My work is a long way from my training, but very interesting. The waterfront construction business went sour, so I did anything for awhile. Remember, I have a wife and five youngsters to keep going. During this period I became interested in Dr. Hay by reading his book 'The New Health Era.' I started practicing what he preached and found by practical experience it was sound and according to the fundamental natural laws. I finally went to work for him at Briarcliff Lodge, where I stayed two years in the office. It closed November 15, 1935, for the winter, so a small place was opened for a winter headquarters in the North. Most of the staff went to Florida for the winter, leaving me with a free hand here with a doctor and a small force. We are doing a wonderful job of making sick people well and teaching them how to keep well."

These letters are very interesting and help to keep alive the splendid contacts and friendly feelings among our classmates. My collection of material for news is exhausted. Help! Help! I must have something for next month's column. Somebody write something. I have a good idea: Why don't you fellows write in about your children? We all know one another fairly well and I am sure that old friends of the past would like to know about one another's children. So let's have a Children's Hour. — AZEL W. MACK, *Secretary*, 72 Charles Street, Malden, Mass.

1916

Our reunion, June 5, 6, and 7, at River-sea Inn, Saybrook, Conn., is now a thing of the past, but it certainly will live for years to come in the memories of those of us who attended the affair. It will be the subject of conversation, without a doubt, until our next big one, which will be our Silver Anniversary in 1941.

First of all, our permanent reunion committee chairman, Steve Brophy, again did himself proud, both in handling the preliminary publicity, which included the scandal sheet known as *Nineteen-sixteen News*, and in the complete and satisfactory arrangements at the Inn. To submit a list of those who attended the reunion would read like a Who's Who for the Class. The clan began to gather as early as Thursday evening, when a few of the boys from New York took possession. As yet they have not accounted for all that took place on Thursday evening. Reinforcements began arriving early Friday forenoon, June 5. From then until Saturday evening members of the Class continued to arrive. Upon arrival they found Walt Binger with his pen in one hand, checking their arrival, his other stretched out to receive the elusive ten-dollar bill, without which one could not be sure of a place to sleep. After passing Walt's desk, we were confronted with the ever present Rusty White, attired in the new 1916 outing shirt, drinking apron, and the remarkable gray and red stocking hats supplied by none other than Barney Gordon. It was in such finery that the members of the Class disported themselves during the reunion. Whenever one of the headpieces showed an unsightly run, there was another cap available.

After a change of clothes and getting into the reunion costume, the first port of call was in the cottage next door, where Bill Farthing had again set up "Ye Olde 1916 Tap Room." The announcement stated that this opened at 12 o'clock noon. As a matter of fact, it was never closed and therefore there was no opening time. To Bill we owe a permanent vote of thanks for this remarkable institution.

On Friday afternoon, after greeting long missing classmates on their arrival, the tennis players wound up on the courts and the golf enthusiasts settled many an old score on the links. Hovey Freeman, who decided not to reduce at this reunion, got out his lawn bowls and interested a few of the slower moving

brethren in bowling on the green. The usual clambake was staged on the shore of the Sound on Friday evening. It was amazing to see the tasty food produced from the pile of sand and gravel on the beach. Personally I attribute the real success of that evening to Bill Farthing's arrangement for moving some of the essentials from Ye Olde 1916 Tap Room to the shores of Long Island Sound for the occasion. The clams were good, the lobsters were better, but somehow or other not enough of the rolls were eaten, because when the repast was finished and idle hands were not otherwise engaged, the rolls were brought into play by some of the boys who had served in the trenches and thought they again had bombs in their hands. Needless to say that when the end came, it came quickly and dramatically. An adjournment was taken to the confines of Ye Olde 1916 Tap Room, where more serious matters were given consideration, including bending of the elbow and card playing. Which of the two was more serious has not yet been decided. Those in attendance at both sports failed to recall going to bed at all. Only Frank Hubbard seems to remember very much about the poker game, and that is because he won all the money. He more than paid expenses, and in fact some of us are inclined to think he bought an interest in his airplane firm when he returned to Long Island City.

With Saturday morning the reunion was in full swing, with all of the scheduled tournaments in tennis and golf getting under way. The golf enthusiasts had quite a surprise in the performance of Bob Wilson, who won the affair with a score in the low 70's. We do not understand how a *high* official of the Pan American Petroleum Company can get such a *low* score, but decided to ask no questions. It would not be fair to mention golf without speaking of Joe Meigs. He was one of the most persistent golfers on the course, and probably turned in the highest score. Hen Shepard ran the golf tournament and we are at a loss to understand why he did not bring his famous golf balls with him for the crowd to use. Confidentially, he is now interested in bowling balls and tells us that there is much more of a future in this line than in the golf-ball field. Those interested in having personal bowling balls will communicate with Hen Shepard at Watertown, Mass.

Jack Freeman put in an appearance towing a dinghy on a trailer and entertained some of the boys sailing on Long Island Sound. Perhaps at our 25th reunion we may have a fleet of boats at the celebration. — Chuck Loomis was on hand, having come all the way from Memphis, Tenn. He, Dick Hunneman, and Santa Claussen solved all of the troubles of the Bemis Bro. Bag Company during their stay at Saybrook, although we must admit that Santa certainly favored his dogs more than he did his classmates on this particular occasion.

Good old I. B. McDaniel, who came all the way from Atlanta, gave a good account of himself as usual at the piano

1916 Continued

and responded very generously to the appeals for Tech Show music and some of the more modern tunes.

Steve Whitney was busy from morning until night on Saturday, trying to get his talent for the banquet and entertainment lined up. His results were quite interesting, as he finally produced a remarkable show of juvenile talent from the sleepy town of Essex, Conn.

At the banquet it was announced that we had broken the records for attendance with 72 members of the Class attending the reunion. The room was appropriately decorated with favors scattered about the tables. It was a good thing we had plenty of favors and that most of these were noisemakers, because it was through this means that we managed effectively to drown out Rusty White, who acted as toastmaster, and keep him from monopolizing the entire evening. — Dave Patten, to whose bugle calls those of us who attended camp at Machias responded promptly at meal time, were forcibly reminded that Dave had lost some of his ability as a bugler when he attempted to call us to meals during the reunion. While his work on the bugle was nothing to be proud of, Dave, we understand, has made a remarkable success of his security business at Boston. More power to you, Dave!

We must not forget to mention that Ralph Fletcher, the ardent exponent of trap shooting and skeet, took Yours Truly, Steve Berke, and George Petit over to the Essex Skeet Club, where he instructed us in the fine art of skeet shooting. Incidentally, Ralph Fletcher is such a good shot that Hovey Freeman refused to come along and be beaten. We hope there will be more competition in this sport the next time we get together.

On Sunday morning the Steam Roller Committee, together with two tired and overworked Class Secretaries, lined up proceedings for the class meeting which was held on the lawn in front of the Inn at 11 o'clock. With great formalities the Secretary's and Treasurer's reports were read and placed on file. Other matters of class importance were given serious consideration, such as plans for our 25th reunion. Yours Truly and Steve Berke were handed the job of carrying on the secretarial work until the next reunion. In the front section is the picture taken at the class meeting, showing the crowd on the front lawn of the Inn.

Sunday after lunch, some of the over-tired reunioners returned home. Others who could take further punishment embarked for Boston to make the good old Lenox their headquarters for the next day and a half. We are at a loss to understand just what Francis Stern, Ralph Fletcher, Steve Brophy, Mac, Chuck Loomis, Dina Coleman, and Steve Rowlett had in mind when Rusty White caught them just after they had disposed of some barber poles by thrusting them into the fire box in the boiler room at the hotel and that brings me to this point: Good old Rusty White on Sunday afternoon found himself in a terrible plight at the Saybrook railroad station, feeling very much like the "forgotten man"; he

could not believe it to be true, so hastened back to the hotel to be sure that he would not be left there. To make doubly sure of this and to be sure that he would not return to the hotel, and to make sure that he would leave town, he took with him the chief of the hotel detectives or bell boys (we never knew which they were during the festivities), who escorted him to the Hotel Lenox at Boston to make sure of his arrival there.

In Boston further serious problems were settled at the Lenox and a few stout survivors managed to look over the new boat club at the Charles River basin, to attend the delightful luncheon in Du Pont Court, and to visit with a few of their former professors and friends at the Institute.

The Secretary has been unable to answer all of the questions that have come to him concerning Ralph Fletcher's unusual ability to play "Red Dog." All I can say is that this is a warning to all future reunioners to stay out of the game of Red Dog when Ralph Fletcher is about, unless they wish to contribute generously toward his reunion expenses. — Of course we are not advertising, but Barney Gordon's donation of the silk stocking hats certainly should be an inducement to all '16 men to patronize Gordon silk hose this Christmas. — We would like very much to know why our good friend Dave Patten insisted on singing "Winona I only hear you calling me," on the last day of the reunion. — Bud Kaula, lately from Australia serving under the flag of the Texas Oil Company, brought us some imported stories, the points of which many of us are still puzzled about. Anyone having proper solutions will please forward them to Steve Whitney.

The class song, which Mac trained us to sing, has been carried back with Mac to Atlanta and put into moth balls for our next reunion. Those wishing advanced copies should get in touch with I. B. at that location. — We understand that Tom Berrigan is arranging with the metropolitan police in Massachusetts for all the needed protection for our next reunion.

What happened to Forsyth? He did not show up with his plane, although he was in charge of that section of our program. — Just how many weighty problems were settled in Ye Olde 1916 Tap Room we cannot say, but on many an occasion we saw Joe Barker, dean of engineering at Columbia University, Bill Barrett of the Metropolitan Life Insurance Company, Tom Holden, Vice-President of F. W. Dodge Company, Hovey Freeman, Bill Kniesner, Arvin Page, Joe Meigs, Leonard Stone, and Harold Dodge in weighty arguments lasting hours at a time.

The class spirit certainly was shown when Francis Stern flew from Chicago Friday night in order to be on hand for the occasion. Charlie McCarthy rushed back from Washington on Saturday in order to take in part of the reunion. Dina Coleman gave up his yachting and coal mines to be with us. Duke Wellington, although from nearby New Haven, divided his time between the reunion and the

problems of contamination bothering him in connection with the New Haven water supply. Incidentally we think that Duke Wellington and Walt Binger might well engage in a debate at the next reunion on the subject of "drilling private wells for residence drinking water supply." Both are authorities on the subject. Lew Pratt, Spofford's star pupil in bridge design, turned up after 20 years of seclusion in, we hasten to add, the machine-tool sales world. Incidentally, Al Lieber is quite busy out in Ohio taking care of the Army's end of engineering in connection with WPA jobs. Al certainly has retained his youthful figure and appearance. The army life must be agreeing with him. Dick Rowlett was on hand. He has not changed a bit since the days he traveled with the Musical Clubs back in 1915 and 1916.

A communication from Rusty White gives a few more interesting high lights on the reunion: "I find myself recovering from a terrific attack of summer vacation. Am convalescing at Harold Whitney's hospital on Lake Winnepesaukee, and it will either kill or cure me. . . . How's about it, Irving McDaniel? You've taken treatments here and lived to tell us about it!

"As I recall, Saybrook was enveloped in a damp fog during this period (June 5, 6, 7); in fact, the only clear moment I remember was when Ralph Fletcher set me on fire during the banquet. Think of our National Skeet Champion barging into a tennis tourney and shooting the balls while in play full of buck shot! No wonder I was illuminated the first round. (Rusty is speaking about the tennis game, in which he played Woodbridge, during which game Bill Farthing used the tennis balls as clay pigeons.) And as for Dave Patten, it was hard to tell whether he was at a reunion or trying to imitate Harpo Marx as he chases blonds. — And what happened to the Gloucester hammock on the porch of 'Ye Olde Tap Room — it never closes'? . . ." In closing the notes for this issue of The Review Rusty has furnished us with a very fitting quotation from the Boston *Herald* of August 29: "For it is true that long after men have forgotten quadratics and the causes of the War of the Roses they are apt to recall walks and talks and drunks and moonlight and friendships and moments that blend into a golden sheen — that is almost the sum total of college to them."

The 72 present at Saybrook were as follows: Joseph W. Barker, Steven R. Berke, Thomas A. Berrigan, Walter G. Binger, Thomas D'A. Brophy, James A. Burbank, Philip C. Baker, William J. Barrett, Richard G. Berger, Wesley Blank, Raymond G. Brown, Robert A. Crosby, Theron S. Curtis, Howard P. Claussen, C. A. Coleman, Jasper B. Carr, Frank Chandler, Ralph V. Davies, Kemerton Dean, Harold F. Dodge, Karl E. Engstrom, James M. Evans, Hovey T. Freeman, John R. Freeman, William J. Farthing, Ralph A. Fletcher, Barnett D. Gordon, Harold P. Gray, Gilbert H. Gaus, Lee Graves, John Gore, Paul Hatch,

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Thomas S. Holden, J. R. Hunneman, Hubbard, Edgar L. Kaula, William T. Kniesner, Richard G. Knowland, A. C. Lieber, Charles W. Loomis, E. W. VanC. Lucas, Jr., Thomas G. Jewett, C. S. Makepeace, Charles J. McCarthy, I. B. McDaniel, Edmund S. Parsons, Joseph Minevitch, Arvin Page, David L. Patten, George H. Petit, Lewis H. Pratt, Charles W. Lawrence, James M. Ralston, John D. Robertson, Richard S. Rowlett, Henry B. Shepard, Leonard Stone, Norman J. Thompson, Hyman B. Ullian, Norman J. Vile, Porter C. Webber, Donald B. Webster, Jackson B. Wells, Russell H. White, Harold Whitney, Marshall S. Wellington, Robert E. Wilson, Donald E. Woodbridge, John E. Woods, Joseph V. Meigs, Melville H. Rood, Francis E. Stern. — JAMES A. BURBANK, *Secretary*, The Travelers, Hartford, Conn. STEVEN R. BERKE, *Assistant Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

1917

There was a most successful Technology reunion of the modern type early in June. A large committee carefully chosen was headed by the capable, suave, and genial 1914 dynamo, H. B. Richmond, and so Ham Wood's attendance records went down to defeat. Registration at this Alumni Day exceeded that of last year by four — and from the noise it is assumed that the increase was wholly due to 1914 men brought in under pressure from their Secretary. Ham, however, was still on the dinner committee and played his part in making the dinner program a successful one.

There was no 1917 reunion festivity. Curtin, Loengard, Proctor, and others in New York had had various meetings and had considered literature from attractive Connecticut resorts. Participants in these meetings report that they ranged from two or three kindred souls gathered around a bottle of Poland water to the New Year's celebration attended by Leon McGrady, Erwin Schell '12, and other notables. They were all pleasant affairs; and plans of all sorts were outlined, reoutlined, revised, discussed, discarded and taken up for reconsideration. Unfortunately, however, these meetings were so satisfying in themselves that nothing eventuated and not even Bob Marlow left New York to take advantage of the reduced train fares to Boston. Not a New Yorker was present and we can only hope that this means a slowly gathering momentum that will show its full force next June.

We also missed Treasurer Ford, an honorary member of the Class of 1917 and of one or two other favored classes. He was dressed in full armor and in fine condition for his promised attendance at the special ladies' table; he dared not risk even a brief interval with us. We also missed most seriously the moustache, smile, and brilliance, and the inimitable touch that were Allan Winter Rowe's, late Secretary of '01 and frequent attendant as honorary member at some of the most enjoyable gatherings 1917 men have

known. Penn Brooks was too busy in Chicago and one or two West Coast men had been East so recently as to make another trip impossible. Dudley Edwards Bell stayed away to practice new magical illusions for another year.

However, we did have Ras Senter all the way from Texas, and an important Transportation Conference induced Phil Cristal to join in. Phil has seldom been with us since graduation, but he proved an addition that cannot well be spared in the future. John Hancock Babbitt was also brought on by the Transportation Conference for the first time in several years and he, too, made us wish that the subject of transportation could be considered more frequently. J. F. Maguire heard that some of us were in danger of forgetting our mathematics and so brought slide rules which were distributed to every '17 man with a few passed on to favored outside friends whose interests were sufficiently scientific. Ed Tuttle, host at one of our first big reunions, made up for a bit of lapse. Rudolph Beaver entertained Dean Lobdell with a discussion of surgical knives.

Frank Conaty said he might appear again with us next year, his first presence at this Alumni occasion having proved worth while. There were many more and, in fact, enough to give 1917 its usual high ranking in the attendance lists. As a matter of fact, although 1917 had no special reunion and had made no special effort at ballyhoo like 1916, we were second in attendance only to 1926, which had a tremendous turnout for its 10th.

Ham Wood collected \$2.00 a head from every member of the Class in attendance as a fund for the big 20-year reunion which we shall hold in June of next year. Enthusiasm appears to run high and not only with those who were in Boston or Cambridge last June but with others at more distant points who have been seen recently. By all standards except noise and beverage consumption, 1917 should next year have the most successful reunion any class has known. Nineteen-fourteen has reached a decibel disturbance level which we have no desire to exceed and 1916 has set an unenviable mark for the consumption of fluids. We believe we already have the record for satisfying enjoyment at our reunions and we intend to hold it. We should also have a large attendance even though that is not the prime objective. We will be well content with the certain sufficient number of convivial souls who will come regardless of the distance that they may travel.

J. L. McClellan dropped in unexpectedly in July and although his was a business call, the chance to renew contact with him was nevertheless pleasing. He has promised to be at the reunion next year, where undoubtedly he will see many others who have not been present at the interim meetings a somewhat smaller group have enjoyed. He is a chemist for the Hollingsworth and Vose Company located at Groton, Mass. — During the summer I had an opportunity to visit Phil Hulburd in his delightful

sanctum at Exeter. I had been told that the visit would be an occasion well worth any effort whatever it might involve. Phil has acquired calm dignity and moderate additional weight as a suitable accompaniment. His daughter, Lucy, has reached the college stage and has had some difficulty in finding school surroundings as attractive as those to which she has been accustomed in her own New Hampshire community. Mrs. Hulburd gave Phil permission to attend the 20th reunion next year and he has already sent in his preliminary check with an indication that the date is marked on his calendar.

It was with great shock that we learned this summer of the sudden passing of Nelson Keene on July 2. The published notices were supplemented very briefly by a note from his brother-in-law, C. Wesson Hawes, XV, and it was only then that we learned that he had not been continuously in the best of health in the last few years. He had been carrying a heavy business burden most successfully in his executive capacity at Plimpton Press. Those who attended the last reunion at the Corinthian Yacht Club will recall how willingly, pleasantly, and with his usual thoroughness he took care of the financial details and we had all hoped again to renew our association with him during the coming year.

Clippings from various foreign journals followed C. E. Turner's recent world tour in the interests of public health education and progress. The following from the *China Weekly Review* of Shanghai are typical:

"Before his departure from Nanking, Dr. Turner had the opportunity of investigating the work of the National Health Administration by which he was highly impressed. Dr. Turner will continue his investigation trip to North and later Central China. He has been asked by the Ministry of Education and the National Health Administration to investigate health education in Chinese schools. Dr. C. K. Chu of the National Health Administration is accompanying Dr. Turner. The investigation is expected to take three weeks." And later. . . "Dr. Clair E. Turner, Professor of Public Health in the M.I.T., was a visitor to Nanking last week. On March 4 he paid a call on Dr. Wang Shih-chieh, Minister of Education, and Dr. J. Heng Liu, Director of the National Health Administration. The American educator also visited the educational institutions and inspected the progress of health education in the capital."

Professor Locke '96 tells us that Lewis W. Douglas, former Director of the Budget for the United States and now Vice-President and Director of the American Cyanamid Company, underwent an intestinal operation in New York City on July 13 at the Lenox Hill Hospital. — Elmer Clark Matthews of West Sand Lake, N. Y. — a short way from Troy — paid the worthy Dean a social call in the early fall and picked up some of the latest gossip. He is running the Thermo Mills, manufacturing woollens in Athens, Hud-

1917 Continued

son, and West Sand Lake, N. Y. — Not so far away is Canajoharie where John S. Ellithorp, Jr., not only has much to say about what goes on in the plant but is one of the leading town fathers of Canajoharie itself. Among other things he is said to wield an uncanny hidden authority in the fine (interior, not exterior) hotel — the Wagner — run by Beechnut. Anyone driving in that section of the country should visit it. A frequent caller there is Roger Lowell Putnam, II, President of the Package Machine Company of Springfield, Mass. Both Ellithorp and Putnam promise to attend next June's reunion. So also do recent Cambridge visitors: Cliff Carlton, curator of geology and mineral industry of the Museum of Science and Industry in Chicago, Ill., and Milton W. Pettibone, architect, of Detroit, Mich.

The *Journal* of the Engineering Societies of New England for September gives notice of a talk by Irving B. Crosby, consulting geologist, at the Boston Society of Civil Engineers on October 14. He took for his subject, "Engineering Geology of the Passamaquoddy Project," and in his paper I. B. showed how the geological development of the region has made possible the project; described the conditions at the principal dam sites and the proposed plans to meet these conditions; and discussed the possible sources of concrete aggregate and embankment material.

Walter A. Wood, following a promise of long standing, came in to report. He has decided to give up his teaching activities; he has been for some 10 years on the staff of a private elementary school, but now returns to the business world in order to accumulate a fortune before he retires. He will represent the Russell, Burdall and Ward Bolt and Nut Company of Port Chester, N. Y., covering the New England and some of the adjacent territory. — R. C. Erb of New Hampshire defeated Mortimer W. Singer of New York in the State Open Amateur Golf Championship Tournament at Poland Spring, Maine, on August 22. He thus won the Hiram Ricker cup. — John Milton De Bell went with the Fiberloid Corporation in Indian Orchard, Mass., last spring. His company is one of the leaders in thermoplastics and is actively investigating new plastics and new applications. John feels as sanguine as ever about the impending expansion in the thermoplastic and synthetic resin field. He has charge of a general development program with his company and quite properly refuses to discuss any details. He is living at 20 Edgewood Avenue, Longmeadow, Mass.

The Grand 20th Reunion of the Class of 1917 is officially scheduled for the weekend of Saturday, Sunday, and Monday, June 5, 6, and 7, 1937, at the Corinthian Yacht Club at Marblehead, Mass. It is expected that a few of the hardier specimens will arrive in time for an evening meal on Friday, June 4. Letters have been sent to a few in the Class to ascertain the extent of the interest and to get assurance from some of the more notorious individuals that they would be present.

Some 40 have already replied and with a few exceptions have sent in a \$2.00 check with assurance that they will be present. In due time all of the Class will be canvassed but there is no reason why anyone need wait for a more formal notification. Both the \$2.00 check and indications of plans to be present will be most welcome. More details next month. — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

News of the brethren since last we went to press comes from such southern latitudes of glamorous adventure as Bermuda and Panama. Yale Evelev "postcarded" us in July from the St. George Hotel that Bermuda was exactly the spot for a wonderful vacation in case you are a tired electrical contractor.

With all the teasing mystery of an anonymous contribution comes a copy of the *Panama American* of Monday, August 17, and a little bulletin called the *Panama Guide*, dated May 30. Page four of the latter contains three sets of test questions headed "How Good a Husband Are You?" As a sort of stuttering explanation, the donor labeled this "Not personal, but for the Class." It is not only that the test leaves us frustrated and bereft, but the note of impatience with which such an inclusion might be regarded by The Review's rules for the guidance of Class Secretaries that deflects us from quoting these bruising questions, one of which is: "After one drink, do you betray family secrets?" — As to the newspaper, it is a gold mine of raw material for the pulp writers. The front page drips with the account of a French journalist who had just escaped for the fifth time from that hell-hole of the Guianas, Devil's Island. Ho hum, what sissies most of us turned out to be.

En route from Maine to New Jersey during the bright, relaxing days of summer, Pete Harrall, assistant to the engineer of lines for the Western Union, left a little note under the unresponsive door of our office; and on August 1 (we know because his was dated) Stanley Cummings, director of the Hoover Vacuum laboratories, did likewise. — In June Carlton Tucker attended the Society for the Promotion of Engineering Education meeting at Madison, Wis., as did also this laggard scribe. — F. ALEXANDER MAGOUN, *Secretary*, Room 4-136, M.I.T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Some of you fellows missed a very pleasant Alumni Day and night at the Pops on June 8. Among those present at Symphony Hall were Art Blake, Art Kenison, Clarence Nutting, Carl Svenson, Jim Holt, George McCreery, and Yours Truly. This group was very enthusiastic about arranging class affairs so that many of us whom we know are interested can get together for an occasional good time. It was the feeling of those present that we should have an active representative on

the Alumni Council and it was unanimously voted that George McCreery be suggested to the executive committee to fill out the present unexpired term.

All those present contributed \$1.00 for annual class dues so that our finances are very much in the black already and this money will probably be used in part, at least, to send out a questionnaire to all members of the Class whose addresses are known. We know we can count on your coöperation in returning this with the desired information and, in the meantime, the Secretary will be glad to receive further contributions for class dues from those interested in helping us along.

It is planned some time in November to arrange a meeting of the above group and others whom we can contact locally to make arrangements for supper and a bowling party, or any other desired amusement, at Walker Memorial at a later date. If some of you fellows near Boston are interested in attending the meeting to discuss class affairs, or the get-together at a later date, kindly write me and I will let you know when the meeting is called. At the same time give me information about yourselves, and any others of the Class with whom you may be in contact. I have received several letters from various members of the Class which I am holding for a subsequent issue. — ARKLY L. RICHARDS, *Secretary*, 26 Parker Street, Newton Centre, Mass.

1920

I was very pleased to get a card from Hank Couch announcing the arrival of Henry Ruffner Couch, Jr., on September 6. This birthday is only one day after that of the famous Bugbee twins, so it seems fair to say that Hank Junior runs awfully close to getting off to a good start. — It is with regret that I must report the death of Arthur R. Holt on August 5 at his home at 15 Rice Street, Newton Centre, Mass.

Several members of the Class have received recognition for distinguished commercial enterprise of one sort or another. It is a pleasure to note Ed McCarthy's appointment as general sales manager of The Gamewell Company at Newton Upper Falls, Mass. — Dave Fiske represented the American Society of Refrigerating Engineers at the Seventh International Congress of Refrigeration at The Hague. As part of a two months' tour of European countries last spring, Dave is secretary of the American Society of Refrigerating Engineers. — Irwin L. Moore was elected president of the International Hydro-Electric System to succeed A. R. Graustein. This also took place last spring. Moore, who was graduated in Course VI after graduating from Cornell in 1917, was with the New England Power Company for some years and was later assistant to the president of the International Paper Company. He later became associated with the International Paper Company's hydroelectric power properties in Canada and was made vice-president and director of International Hydro-Electric System in November, 1935.

1920 Continued

Lauren B. Hitchcock resigned as professor in charge of chemical engineering at the University of Virginia to join the Hooker Electrical Company the first of the year as consulting chemical engineer with headquarters at 60 East 42d Street, New York, N. Y. — Dr. Charles E. Ruby is conducting a course in trade-marks, copyrights, and patents at Northeastern University School of Law.

We are pleased to hear of A. A. Brown and his pal, Syner. The Brown family came back from Parral, Mexico, for a summer visit at Southbridge, Mass. A. A. is general manager of the mining unit of the American Smelting and Refining Company at Parral and Syner is with the same outfit. Another miner is Livingston Wright, who is with the Comstock Mine at Steamboat Springs, Nev. He has another claim to being signally honored in that he has been appointed deputy sheriff of Warshoe County, Nev. [Editor's note: Since these notes were sent in, we have had word that Mr. Wright has left Nevada for Bolivia, South America, where he is associated with Patino Mines and Enterprises, Inc., Compania Minera y Agricola, Oplora de Bolivia, Chocaya.]

Foster Doane has left Pittsburgh and is now in Wilmette, Ill. — Warren Chaffin may be now reached at 9 Hamilton Avenue, Wheeling, W. Va. — Our old friend, Carl Leander, is now Dr. Carl Leander, 72 Waltham Street, Lexington, Mass. — William Morton Breakey Freeman is now residing in Leesburg, Va., on "Woodburn Farm." — Fritz Boley has moved from New York to 7100 South Shore Drive, Chicago, Ill. — Your Secretary has been enjoying some business correspondence with Tony Anable, who is now a big shot with the Dorr Company, 570 Lexington Avenue, New York, N. Y.

I can't claim to be wholly neglected, as I did get the following very welcome letter from Bob Tirrell: "From the absence of class notes in *The Review* over the past several months, I rather presume a small contribution, no matter how bad, might be welcome. So here goes, and you can use as much or as little of this letter as you see fit. — Usually the first question to be answered is 'Where are you?' and 'What are you doing?' To answer the first, I am still associated with the Socony Vacuum Oil Company, Inc., with whom I have been since 1929. Last May I was assigned to European territory with my office in Hamburg, Germany, where I may be reached care of Deutsche Vacuum Oil A.G., which is the office of our German affiliate. My work in Europe is to act as technical adviser for the New York Company to the several European affiliates, and my territory covers practically every country in Europe.

"This assignment has, to date, proven most interesting, for due to the movement on the part of most European countries to be self-supporting on all major materials, it has been necessary for American industries either to improve their properties or else retire from the field.

"It has been of particular interest to deal with the European engineer and to notice his way of approaching a problem.

Time is not the factor here that it is in America. Delivery of construction material is slow because there are no materials in stock. Because of shortage of foreign exchange, any order coming from foreign countries (export orders) get preference over all others. Then, government rearmament has been moving so fast that these orders must be filled before private industry. So a promise of delivery is only as good as what help you can get from outside sources. The European engineer still sticks to his conventional way of doing things. For every piece of equipment you purchase he must know all details of the whole process, and should you request the machine to be built differently from the conventional way, he will surely say: 'We do not do it that way, here in. . . . ' The European engineer is greatly handicapped by rules and regulations. The government, either national or city, controls everything that is done. There are no codes such as we have to help the engineer. A conference or a series of conferences must be held to cover the several points. Before a construction can take place, it is expected that complete drawings shall be submitted to the several authorities for their permission. On one discussion I counted nine authorities whose permission must be sought, and as you can imagine, it was not long before two or three began to say: 'Yes, if so and so says yes.'

"The education of the European engineer has caused me some surprise, for in my earlier opinion I had always understood he stood perhaps supreme. I've learned now how narrow his education is along engineering subjects, admitting how much broader it is along nonengineering subjects. By narrow I mean his lack of knowledge of the rudiments of allied engineering subjects, such as our mechanical engineers having to study electrical engineering. (Professor Hudson, please note that over here I've actually been taken for an electrical engineer) . . .

"It is interesting to receive little notes, and so on, addressed to Herr Department Engineer Tirrell — for every man of university or college degree is always referred to, at least in correspondence, by his full title. . . . — The question of living in Germany and traveling in Europe has its trials and humor. One cannot have American money here. The Reich bank lays claim to it, unless you're only a visitor, or else the money is covered by an acknowledgment. Hence our stock of United States dollars is nearly nil. And when one travels from Germany one can take out only 10 Reich marks. So you can readily see the humor of starting out with a nice bag full of clean clothes for a two weeks' or month's trip with 15 United States dollars and 10 marks in my pocket. Every border one crosses is beset with customs officials who ask you how much money you have, whether it is going into a country or going out. Still it is a rather uncomfortable feeling to know that there isn't enough for one night's hotel in the pocket and that maybe you will not meet your business acquaintance at the other end.

"According to the Register I am the only M.I.T. man in Hamburg, but as it is a seaport, it is the entrance for most ships to Germany. Hence if any M.I.T. men come to Germany via Hamburg, Mrs. Tirrell, the two boys, and I will be very glad to see them. In this connection K. B. White gave me a call from Lubeck the other day while there from Paris or London, and Carl Gram '09 was with us for an evening while here on business last December. . . . I have particularly kept away from any political discussion as it is still not good to write one's opinions, regardless of how one may think. As a matter of fact, most of my scandal on what takes place here comes from American newspapers which are sent to me.

"Nineteen-twenty news has really been scarce. Why not start a roll call for news — a letter to so many each month with a demand for an answer? If no answer comes state: 'John Doe — too lazy to answer.' It might be a challenge." — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Our 15th reunion last June is now a matter of class history, but those who gathered to celebrate will agree that the Norwich Inn, Norwich, Conn., was the scene of a most fitting and enjoyable observance of our anniversary. Due credit should be given to Dan Harvey, who for the second time prepared and carried out a reunion program which sets another high mark that our 20-year gathering will be hard put to surpass.

The celebration started with the arrival of some 30 of the Class on Friday afternoon, June 5, and lasted far, far into the night! Saturday brought more of the Class, a golf match, tennis, plenty of impromptu sessions and, finally, the big banquet. With Sunday came a few late arrivals and a continuance of indoor and outdoor sports until the trek for Alumni Day at Cambridge started late in the afternoon.

All in all it was a grand time, heightened by ideal weather, a delightful meeting place, and the sociability which we have come to expect. There was a touch of official recognition in the most welcome attendance of Professor Timbie to whom we personally feel particularly indebted for his "back porch" discussion of Technology's aims and attitude in the matter of prospective students. — Prizes were awarded for athletic prowess (and ability to have their names drawn from a hat) to Booth, Chutter, E. R. Clark, Gokey, Griswold, Jenney, Patton, Phaneuf, Povah, Shaw, Whipple, and Zoller.

Those who obtained the class picture may wish to clip this list for identification of those present. The picture shows, from left to right, seated: Booth, Greene, Hawes, Gokey, Windisch, Loesch, Zoller, Peirce, C. A. Clarke, Giddens, Bards, Kittredge, Howard, Lloyd, Kurth, and Ready; standing: N. F. Patton, A. D. Harvey, Nixon, Hanson, St. Laurent, Schnitzler, Goodman, Hurley, Dennison, McKay, R. M. Shaw, Jr., Chutter,

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Professor Timbie, W. S. Ross, E. L. Rose, Silverstein, Whipple, Lurie, E. R. Clark, Jenney, and Kowarsky. Present, but unable to break away long enough to be "mugged" were: W. R. Barker, Castonguay, Crosby, B. Fisher, Jr., Gartland, Griswold, Norton, Phaneuf, Povah, Rosenfield, Stuart, and Wetsten.

Most of those present were seen in Cambridge on Alumni Day and heard in Symphony Hall that night! Unable to attend the reunion but present at Alumni Day were: E. T. Adams, Binns, Jetter, MacMillin, Nelles, Pauli, Randall, Rood, J. A. Scott, J. M. Sherman, Steffian, Thomson, and Vitalini.

The one note of sadness was the report of the passing of Willard H. Ray on May 15 at his home in Norfolk, Va. President of the Colonial Oil Company which he organized on moving to Norfolk eight years ago, Bill was prominent in civic and social affairs. He was a native of Grinnell, Iowa, and came to the Institute in our junior year from Grinnell College where he had been elected to Phi Beta Kappa. A member of Beta Theta Pi, he was also identified with the Norfolk Orchestral Association, the American Legion, the Virginia Club, the Princess Anne Country Club, and a number of local community organizations. He is survived by his wife, Mrs. Roberta Newton Ray, and three daughters, Roberta Page, Mary Joanna, and Sara Inglis Ray, to whom we extend our sincerest sympathy on behalf of the Class. Yard Chittick '22 very kindly sent us clippings from Norfolk papers which include a glowing editorial tribute to Bill's outstanding qualities and an expression of deepest regret at the loss of a friend and the ending of such an unusually promising career.

As we assemble these notes, a brief memorandum has arrived telling of the death of John R. Leslie last June at his late residence in West Hartford, Conn. To his family we express for the Class our own great sorrow at his passing.

From the Boston *Transcript* comes the news of the marriage in Washington, D. C., on June 20, of Miss Melena Louise Morosini, daughter of Mr. and Mrs. Louis Morosini of Milton, to Roderick Koenig Eskew, son of Mr. and Mrs. John G. Eskew of Charleston, W. Va. Mrs. Eskew is a graduate of Simmons and has traveled and studied extensively abroad. She is an active member of the Club Espanale, Simmons Club, and the Portland Players. Rod came to the Institute from the University of Arizona and has for some time been in charge of technical service for the Brown Company at Portland, Me. The newlyweds are at home at 32 Deering Street, Portland, where our congratulations and best wishes are addressed.

From the Boston *Herald* of July 5: "Mrs. Emma M. Kochersperger of Belmont announces the engagement of her daughter, Miss Rosabel E. Kochersperger, to Mr. John MacDuffie Sherman, son of Mr. Charles W. Sherman of Belmont. Miss Kochersperger is a graduate of the Wheelock School and Boston

University." John topped off a degree in Course X with a stretch at the Harvard School of Business Administration and now hangs his hat in the South Station offices of the New York, New Haven, and Hartford Railroad. Congratulations from all of us, but don't fail to let us know when the wedding bells ring out or we'll publish the truth about the night at the Pops!

Here's how to Alexandra Eden Hawes and best wishes to Councilman and Mrs. Munroe C. Hawes of Sea Girt, N. J., who announced her arrival on May 13! Sandra has a brother and two sisters. Her daddy is a partner of Hawes and McAfee, Inc., Realtors, Manasquan, N. J., and Jim McAfee confides that the "Hawes for Governor" movement is sweeping like wildfire throughout the state. A welcome little card announces the arrival on June 17 of Master Robert Francis Miller, Jr., at the home of Mr. and Mrs. R. F. Miller, 3424 West Highland Boulevard, Milwaukee, Wis. Here's a "reg'lar M.I.T." from our junior cheering section to greet the newcomer to our 1921 family. Up to March of this year Bob's address was given as New York City and this is due notice that we shall look forward to a letter of explanation regarding the new address.

A. W. Norton has moved to Boston where he is now manager of the new office of O'Mara and Ormsbee, representing the *Transcript* in the national field. Recent reports indicate that Warrie has gone in strong for Alumni Council activities in addition to his heavy business duties, which is not surprising considering his former duties in New York as honorary secretary, vice-president of the Technology Club of New York, and head of the very active employment service and scholarship committees of the New York Club. Welcome to the fold from an ex-correspondent of the *Transcript*!

With Dave Woodbury down in Ogunquit, Maine, giving summer courses in playwriting and dramatic construction, we wonder if he ever got around to writing (under a *nom de plume*) that proposed volume which was to have stirred up our reading public into a demand for more — or for the author himself! Or possibly he is the real author of "Anthony Adverse" or "Man, the Unknown"?

We had dinner with our boss, Ray, recently on one of his usual rush trips through Gothamtown on his way West and learned that he had seen Paul Rutherford who has been given the responsibilities of chief engineer of Delco Products, an associate of General Motors located at Dayton, Ohio. Quite an honor to be following in the footsteps of boss Ket! Speaking of Ray, we'd tell you about the niche he has carved for himself if he hadn't threatened to fire us if we did. So we can't tell you about the complimentary things the editors of *Modern Plastics* said on page 27 of their May, 1936, issue, but look it up!

Where is that letter you were going to write to your Secretaries? — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester,

CONN. CAROLE A. CLARKE, *Assistant Secretary*, 10 University Avenue, Chatham, N. J.

1923

The extra long summer vacation for your Secretary made possible by The Review's new publishing schedule has been very nice for him, but it has driven from mind many of the items which were to fill a masterful report on Alumni Day last June. In all, there were about 20 members of 1923 whom I recall seeing either at the gathering in the Great Court or at the Pops. But you'll be spared details and we can get to business accumulated since the last notes in the July issue. — Dick Frazier, VI, who is spending a year in Lawrence, Kansas, as exchange professor for Kansas' electrical engineering department head, who is at Technology, was married on June 13 at Lawrence to Vivian Maud Skilton, to whom he became engaged last spring. — Another Kansas wedding was more recently celebrated at Emporia, when Arthur Edwards, II, married Eleanor Constance Ross of that city on August 19. They will be at home after September 15 at 936 Judson Place, Stratford, Conn.

Professor Locke '96 passed along a note about E. R. Richards, III. Richards came back to his home in Lexington, Mass., for several weeks during the summer, for observation and treatment in a Boston clinic for some digestive difficulties which did not yield to treatment as long as he continued on the job in Mexico. — Milton Parker, VII, according to the *Commercial-News* of Danville, Ill., became on May 15 director of production for the Beatrice Creamery Company of Chicago, and moved there to assume his new duties. He had been in Danville eight years with the National Dairy Products Corporation. With Mrs. Parker and their son, Brian, they were planning to establish a new residence in Wilmette.

The Chicago *Daily News* of August 10 carried the announcement by Dr. Willard E. Hotchkiss, President of Armour Institute of Technology, that Louis Skidmore, IV, has been appointed director of the department and professor in charge of senior design for the school year beginning in September. — There will be several luncheon meetings of 1923 men held in Boston this fall and winter. Notices will be sent only to the relatively few who have already shown an interest in such gatherings by showing up at the one held in the spring. It is suggested that any readers who wish to be regularly notified, so that they can attend when possible, send a note to your Secretary or telephone him at HUBbard 1630 — HORATIO L. BOND, *Secretary*, 195 Elm Street, Braintree, Mass. JAMES A. PENNYPACKER, *Assistant Secretary*, 96 Monroe Road, Quincy, Mass.

COURSE VII

In June Stubby Griswold left his former post as production manager for the Zonite Products Company to become vice-president in charge of operations of Tampex, Inc. — Two old-timers had the

1923 Continued

wanderlust this summer and saw what there was to see in Europe. Philip L. Riley from the Cleveland board of education made some educational studies on the school systems in England and Germany, while Bernard E. Proctor of the M.I.T. Department of Biology and Public Health attended two technical congresses and visited a number of universities and research laboratories on the Continent and in England. They made the trip over and back together and report that the United States still looks good to them.

Gerald A. Fitzgerald of Boston, who is now chief chemist of the Frosted Foods Sales Corporation with headquarters in Boston, was seen at the Pittsburgh meetings of the Chemical Society in September. — Dr. Ruth Thomas, who may be remembered as taking anatomy back in 1922 with all those Course VII men mentioned above, was found attending the Microbiology Congress in London this summer and asked to be remembered to everybody. She is now on the staff of Columbia University.

[The foregoing notes were submitted by a Course VII member without the knowledge of the Secretary, whose name has been appended to conform with The Review style.] — EARLE A. GRISWOLD, Secretary, 347 New Market Road, Dunellen, N. Y.

1924

Just as your Scribe was wrestling with the monthly problem of "what to send to The Review this month," manna dropped from the skies in the person of Bill Robinson, on a short visit from Los Angeles. Having been to Nela Park and Schenectady, Bill was able to include Boston on his schedule, with Dallas as the next stop. Bill has some interesting experiences to tell anent his work on the West Coast, most interesting of which is his present assignment to bring light to the motion picture industry of Hollywood. Bill was particular to stress two points: The light he brings is entirely in the form of General Electric illumination, and he has not "gone Hollywood," whatever that is.

To celebrate Bill's visit, your Secretary tried on short notice to gather a few classmates for lunch and succeeded in locating Chick Kane, now in charge of the home modernization department of the Boston Edison Electric Illuminating Company, and George Knight, sales manager of the Elliott Addressing Machine Company. The result was a quick lunch and a large amount of reminiscing.

Bill reports that Rock Hereford is with the Pacific Company on the same coast in an interesting job involving the financial management of large estates. He likewise said that Si Simonds, again on his way around the globe, was in San Francisco recently. Recent visitors to the Technology Club of Southern California, of which Bill is vice-president, included Dr. Bush '16 and Professor George Russell '00.

From Chick Kane we learn that Ted Kenyon, whose instruments for measuring the speed of boats, as well as his development of a "blind flying horizon" for avia-

tion, have won him fame in the past few years, has sold his business in Boston and has undertaken an important job with Sperry. Likewise, since he and Mrs. Teddy, also well known in aviation circles, have moved to Long Island, no more will the citizens of suburban Boston see their familiar planes overhead.

Our two Dons, Kennedy and Creveling, both miners, have apparently gravitated toward the same spot on the globe, according to recent notes from Professor C. E. Locke '96, as follows: D. O. Kennedy, whose address is Cia Minera de Magurichic, La Esperanza, Chihuahua, Mexico, writes that he is running a little mine away down in the wilderness. It is one of those mines that you read about which has developed very satisfactorily, so that after passing through a period of particularly tough going, they now have a profitable operation. The mine foreman had to leave for the United States soon after Kennedy came on the job and he has been trying to do the foreman's work and his own work at the same time, which has kept him busy. After living there alone five months, he was finally able to secure a house and now has his family with him. Actually the mine is located at the very end of the trail, but it is a very interesting trip into the mine through country covered with pine trees and along little streams so different from other more arid parts of the northern section of Mexico.

D. M. Creveling returned from Cyprus in July with his wife and two children for a real vacation back home at Nashville, Tenn., but the latter part of the summer he received an offer to go to Mexico which he accepted after resigning his position in Cyprus. His address now is: Assistant Manager, A. S. and R. Company, Parrall, Chihuahua, Mexico. — FRANCIS A. BARRETT, General Secretary, 50 Oliver Street, Boston, Mass.

1926

A full report of our 10th reunion last June is being printed in booklet form — at least, that is a platform promise of the secretariat — together with who's who sketches of all members of the Class whom we were able to detect as present. Copies of this illustrated class book, our first, will be sent without charge to all who were present at Winchendon; to others the price of the book will be \$1.00 and orders can be accepted only in advance of publication. In addition to the sketches there will be a confidential statistical analysis — not the usual dull stuff, we hope, but some hopping, dramatic facts — of class income (earned and investment), insurance holdings, house ownership, net worth, and size of family. By way of a footnote there will be included some of the amazing and bizarre ways in which members of the Class amuse themselves in their spare time.

The publication of this book obviously makes it unnecessary to recount in any detail in this column what happened on the week-end of June 6. Furthermore, we do not dare to spill in advance some of the material that is to appear in this book.

Suffice it to say that with an attendance of 107, the reunion probably broke all records for attendance in the history of Technology class reunions; that with only three fists and seven doors damaged the party was a demonstration of sobriety worthy of mention by the W.C.T.U.; that with all attending cheerfully paying the prescribed admission the affair was operated with a minuscule surplus; and that as the two days' sobriety came to an end there was an astonishing chorus of demands that the Class diligently go into training for another reunion five years hence, if not earlier, and that at this next party the statistics collected be concentrated on girth (percentage increase), pate (spectral reflection), and capacity (percentage decrease). (See front section for reunion photograph.)

The year of our 10th anniversary has been fittingly marked by many marriages and engagements. Of these many already have been recorded. We only add at this time: Arnold Flint Taylor was married to Miss Gladys G. Harvey on September 26 in Winchester, Mass.; Frances Hurd Clark, metallurgist for the Western Union Telegraph Company in New York City, was married on June 27 to Robert L. Dietzold, a member of the technical staff of the Bell Telephone Laboratories. Announced to take place in June were the weddings of Frederick C. Balfe, Jr., and Charles P. McHugh, whose brides were, respectively, Miss Rosa Heintz Mitchell and Miss Mary Gertrude Kelly.

The Secretary records with pleasure this report from Jim Offutt: "Since I saw you in June, I have been made assistant to the executive vice-president of the United States Gypsum Company, which means that I have been busy familiarizing myself with my new job. — On August 25 we had a seven pound, ten ounce, boy at the Passavant Hospital in Chicago and named him James Alexander. — You may be interested to know that I have an article on 'Gypsum as a Chemical Raw Material' in the September issue of *Chemical Industries*. In the same magazine I note that two '26 men (A. D. Green and E. J. Gohr) have been appointed to responsible positions in the Standard Oil Development Company."

If memory runneth not to the contrary, the Secretary reports for the first time since graduation on the activities of John E. Nicholas, now professor of agricultural engineering at The Pennsylvania State College. He writes: "In all probability with me as with other members of the Class, we are too busy or too discreet (?) to tell you where we are, so I am taking the liberty to attach a few reprints of some of my experimental research results, which, when you have finished with, you might pass on to the library for future reference. . . . The photo shows Winslow Channing Nicholas, M.I.T. Class of 1951. His mother, honorary member of the Class of 1922, was secretary to the late Professor E. F. Miller — the former Miss Mildred W. Carpenter. There are two other members in addition to Chan (Classes of 1947 and 1953, respectively) but I have no photos available — sorry."

1926 Continued

The reports to which he refers are entitled, "Vacuum Milk Cooler" and "Farm Electric Milk Cooler with Pneumatic Agitation."

Announcement was made last June that Malcolm MacDuffie and his wife had been made joint principals of MacDuffie School for Girls in Springfield, Mass. — The Secretary is happy to report that the L. W. T. Cummings' have a thriving son, born May 24 and dubbed Junior. During his extended career to date he has, as his parents proudly proclaim, already more than doubled his weight. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 11-203, M.I.T., Cambridge, Mass.

1927

[Editor's Note: With this issue of The Review Raymond F. Hibbert takes over the full secretaryship of the Class that was relinquished this summer by John D. Crawford. Mr. Crawford, early in the year, left Cambridge and is now in Philadelphia with the Brown Instrument Company. We welcome Mr. Hibbert as the new Class Secretary and present to Mr. Crawford our homage and good wishes for his success in Philadelphia.]

The brevity of this particular insertion is due mainly to the fact that your correspondent has just arrived in Waukegan, Ill., to take up the battle for Johns-Manville. Nevertheless, with the 10th reunion coming in June our organization plans must be recorded and broadcast. The broadcast is particularly for the benefit of those around Boston, as Dike Arnold at the request of Prexy Jim Lyles is planning to get the Boston group together in the early fall to formulate reunion plans. Dike may be reached at Arnold-Copeland Company, Inc., 222 Summer Street, Boston, LIBerty 3452, and he will be glad to advise his plans for the entire get-together. Let it be known that Dike wants to hear from you and to have you at the organization meeting. With the thought of reunion comes the suggestion that each one of us make plans now to be present. In other words, provide for the occasion in the 1937 budget proposal.

We are pleased to inform the Course VI and XI men that Lawrence B. Grew, General Engineering Department, Southern New England Telephone Company, New Haven, Conn., has consented to be their Course Secretary, effective immediately. — RAYMOND F. HIBBERT, *General Secretary*, Johns-Manville Corporation, Waukegan, Ill. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

1928

After a lapse of several months we take up the pursuit of classmates where we left off last spring. Gustav Stachelhaus has rotated from Goodyear Tire and Rubber Company to Attleboro Gold and Silver Refining Company and then back to the Institute for a master's degree. After that he joined Central Engineering Corporation and Salsterol Laboratory, Inc. Later he transferred to Hygrade-

Sylvania Corporation, where he has worked up as research engineer, parts quality engineer, and finally to general factory engineer on tube machine and tube parts. Gustav's former classmates will be pleased to know of his marriage last year.

Gil Ackerman is still out in Seattle with the Luckenbach Steamship Company, where he says his chief job is trying to deal with incessant labor troubles caused by the labor unions. Gil has two girls — ages three and six years — in his family, and he says he's saving for the 10th-year reunion. How many others will be there? — Yes, Sir, Twenty-Eight is a versatile Class, for up at Attica, N. Y., Roland Hutchings is a teacher at Attica State Prison. Previously he instructed at Elmira Reformatory, where he says the instructors often carried blackjacks to assist in teaching their pupils.

Carlos Ferré is now assistant production manager, Porto Rico Iron Works, where he has charge of the metallurgical and foundry departments. This company makes apparatus for sugar refinery. He was happily married to his charming *señorita* on December 14. — Harold Morrill is construction engineer for the Treasury Department. He has been working on the Federal office building at Vesey Street, New York City. Harold was married in 1926 and has three boys, aged seven months, five years, and seven years. — GEORGE I. CHATFIELD, *General Secretary*, 5 Alben Street, Winchester, Mass.

1929

News of the month, in fact just about the greatest item of interest we have been privileged to report since graduation, has come to us directly from the hand of the lucky man himself: Yes, Brig Allen, our esteemed President, can no longer play baseball with the single men in our reunion ball game. Brig was married to Miss Gladys Schroeder of Scarsdale, N. Y. Ted Ewald, XV, was an usher at the ceremony which took place on August 18 in Scarsdale. The announcement stated that the newlyweds will be at home after the first of October in the Alden House Apartments, Larchmont, N. Y. Well, Brig, we wish you all the happiness in the world and congratulate you on joining the ranks of the benedicts.

We also have the pleasure of reporting the marriage of George Logan, I, to Miss Frances Stewart of Altoona, Pa., on June 6, in New York City. Thank you for sending us your formal announcement, George. By so doing, both you and Brig have materially aided us in writing up the events. We wish more of the reports of marriages came to us in this manner. George and Mrs. Logan are at home in the Greenwood Terrace Apartments in Jenkintown, Pa., after July 15, according to our present information. We forward our congratulations to George and with it our best wishes to the bride and bridegroom for a life of happiness.

We are also in receipt of newspaper clippings announcing the following marriages: Ken Beardsley, VI-A, to Miss

Barbara Anne Blake of Pittsfield, Mass., in June. Ken works for General Electric in Pittsfield and they will live there after their wedding trip. — The marriage of Put Cilley, XI, to Miss Elizabeth Friend of Winchester, Mass., was announced in the Boston papers of June 30 as having taken place, Saturday, June 27. — Larry Luey, XV, our old swimming captain, was married on May 16 to Miss Natalie Birchall of Port Washington, Long Island, which is Larry's home town. According to the news clipping Larry and Mrs. Luey will reside in Bayside, Queens. Apparently Larry is still working around New York for Lee, Higginson and Company. — It was announced that the wedding of John Sullivan, II, and Miss Ann Duble of New York would take place on June 6. John is with the New Jersey Bell Telephone Company.

To the above men who have recently joined the rapidly rising number of benedicts in our Class, we others offer our sincere congratulations and best wishes for a life of joy and happiness.

John Dreyer, II, who has been located in Cincinnati for some time since graduation is married and now proudly announces the birth of a daughter, Susan Jo, on September 19. — Hank Gibbons, II, one of the Akron group, also is proud to announce the birth of a daughter, Anne Carol, on June 19. To these classmates we forward our congratulations on their attaining the status of proud parenthood.

Through the Boston papers we learn of the engagement of Miss Barbara Eleanor Houghton of Cambridge, Mass., to George J. Meyers, Jr., VI-A, in April. — The engagement of B. Clark Boeckeler, X-A, to Mrs. Barbara Smyth Shuman of Plainfield, N. H., was announced in the New York papers. We congratulate these men who have broken away from so-called single blessedness to the extent of filing their intentions and wish them every happiness in their future marriages.

Also from the New York papers we received word that our classmate, Dr. John Kirkwood, V, received the American Chemical Society Award in pure chemistry of \$1,000 at their meeting in Pittsburgh, September 9. The Class congratulates their associate on achieving such distinction. — From Professor Locke '96 we received word that John Way, III, reported that he is lining up a mining job, but while waiting for it to come through he has been working for the Resettlement Administration in Winnett, Mont. During the summer he has been building earth dams on small water storage projects, but now that work is about completed and he will have the job of building swimming pools, tennis courts, and a recreation hall, and he will have to drill a well for artesian water; in other words, he is expected to become more or less of an architect.

Just a word or two about the gang here in Akron: As noted above, the addition to Hank Gibbons' family is probably the high light of the summer. Hank is still working for Goodyear, though now that Zeppelin building is at a standstill he is

1929 Continued

back in the rubber end of the business. Hal Dick, II, has just returned from Europe, where he was observer for Goodyear on the Zeppelin *Hindenburg* on practically all of its flights to North and South America from Germany. Hal is still single.

Johnny Hartz, X, is still in the chemical end of the tire business, working for Goodyear. It is with great sorrow that your Secretary reports the untimely passing of Mrs. Hartz. She had not been well for some time and the end came early this summer. We of the Class join in our expression of sympathy on this occasion of deep sorrow.

Gene Gilman, X, is still in the chemical division of Goodyear. — Yours Truly is still working out of the development department at Goodyear as engineering contact with various automobile accounts in the Detroit area. The job necessitates my spending considerable time in Detroit and as a consequence my golf is limited strictly to the summer months and to week-end play totalling not more than two 18-hole rounds a week all summer. Such intermittent golf is bound to be erratic and it was, though I derived considerable satisfaction from the fact that my season's best score was four strokes under my previous lifetime low for a course of standard length.

Let's hear from you about your own work and recreation. If you don't care to tell us about the details of your work and your progress, tell us what you do for recreation so that we may be prepared when it comes to a golf or poker match at our next reunion. By the way, it would be a good idea to start thinking of that occasion. Our ten-year reunion will be only two years from next June. — EARL W. GLEN, *General Secretary*, Box 178, Fairlawn, Ohio.

1932

This is the beginning of the fifth year that the notes of this Class have appeared in *The Review*. With our first reunion coming along in June it is time to take a more active interest in class affairs. These notes could be greatly improved as the first step. They are a coöperative effort and should not be a statistical compilation by your Secretary. If they were enlivened by quotations from your letters, they would be more readable and enjoyable.

Kipling Adams married Edith Frances Hussey of Sharon, Mass., on July 2. — Tom Anderson married Ruth Stevens of Chicago, Ill., on June 20. Their address is 1810 Jackson Street, San Francisco, Calif. — W. E. Bearce entered the employ of the Granger Lime Company, West Stockbridge, Mass. — John Crowther resigned from Shell to work with the M. W. Kellogg Company (oil refining equipment). He is now living at 554 Fowler Avenue, Pelham Manor, N. Y.

Francis Tufts Gowen married Gertrude Knowles Dyer of Newton Highlands, Mass., on August 8. — Addison Smith Hall married Frances Winston Ivey of Charleston, S. C., on June 10. — In June John Francis Kelly left Bird and Son at

Walpole, Mass., to go across the continent to work for General Paint Corporation at 2627 Army Street, San Francisco, Calif. — The engagement of Richard Marcus and Diana Litch of New York City was announced on August 8. These two expect to be married this fall and live in Boston. — Last spring the engagement of William Stieglitz and Eileen Barbour Thompson, both of Highland Park, Ill., was announced.

John Finnerty was the best man at the wedding of Willard Meyer and Nancy Nicholson Reinke. The event took place in June at Mamaroneck, N. Y. — Since the graduation exercises in June, it is Dr. Robert Mueller who is working at Engineering Research Corporation of Boston. — Walter Nichols married Martha V. Akermark of Mattapan, Mass., on June 15. — Charles Elmer Northam married Elizabeth Frances Snow of Newton Highlands, Mass., on June 11. — I received an invitation to the wedding of Bob Prescott and Mary Louise Rankin. Since it took place on June 1 at Everett, Wash., it is needless to say that I did not attend.

This spring the engagement of Ernest Rolfe Steele and Mildred Elizabeth Tripp of Hancock, N. H., was announced. — Sherman D. Swift is with the Carnegie-Illinois Steel Corporation as an observer at their Clairton, Pa., works. — From Waukesha, Wis., comes news of the engagement of Bruno Werra and Jean Wright, last May. — Joseph Tarbell Wight married Nancy Elizabeth Guptil of Sudbury, Mass., on July 3. — This space is available for the news of our classmates, but you must all contribute. Write me a newsy post card now. — CLARENCE M. CHASE, JR., *General Secretary*, 410 Church Street, Bound Brook, N. J. CARROLL L. WILSON, *Assistant Secretary*, Room 3-210, M.I.T., Cambridge, Mass.

COURSE I

Last winter Mr. and Mrs. George Halvorsen of Brooklyn announced the engagement of their daughter, Norma, to Minot Bridgman. Bridge is still doing actuarial work for Metropolitan Life. — Bob Thompson spent the past academic year at Harvard, taking graduate courses and acting as assistant to Professor Fair, head of Sanitary Engineering at Harvard. Bob doesn't intend to return this year. He plans to work for some consulting sanitary engineer and get away from academic work. — Henry Mitchell finished his second year at Harvard Business School. After trying many jobs, he decided a business education might land him the job he'd like best. Good luck, Mitch!

Until the middle of January, I was employed by the J. N. Chester Engineers of Pittsburgh, doing designing, drafting, and estimating for sanitary engineering plants. Work became a little scarce, so I left them and joined the engineering staff of the Pennsylvania Railroad. This work was interesting, but far afield. A month later I was offered a position as a sanitary engineer with the Dorr Company, Inc.,

the largest equipment manufacturers in the field of sanitary engineering. During the months of March and April I was employed in their research laboratories in Westport, Conn. Since the beginning of May I have been in Sioux Falls, S. D., conducting experiments and operating the new activated sludge plant at Sioux Falls. I am getting splendid experience in plant operation and research work. . . . Let's hear from all of you. — ROLF ELIASSEN, *Secretary*, Seville Apartments, Sioux Falls, S. D.

COURSE X

In spite of an earnest appeal in last May's issue, Crowther was the only one to crash through with some news. He wrote a fine, newsy letter which contained the following information, well dispersed in a goodly amount of *Voo Doo* humor (adv.).

It seems that Johnny has left the paper business and is now in Arkansas City as technical assistant in the refinery of the Shell Petroleum Corporation. They didn't seem to let John's talents rest long in one point, for in his travels he worked ten months with Captain Kellogg's (C.W.S.) brother in St. Louis, who is technologist for Shell in that city. — Dubb Rash is finally out of circulation; he married Lucy Locker last fall. Congratulations, Dubb.

Potts Chambers is apparently back at M.I.T. after a Ph.D. — Tom Anderson is still with Standard Oil but is in California now, and Bob Ingram is an air-conditioning expert in Oklahoma City. — I called Bobby Parker in Buffalo when I stopped at the airport there for a few minutes, and he either has a new job or has been transferred to another plant.

As for myself, I've left the state of Maine and am now assistant technical director of the Allied Paper Mills in charge of research and development. If any of you ever come through Kalamazoo, get in touch with me and we'll break bread together, and I can put you up all night. — But for gosh sakes, drop me a line about yourselves. — WILLIAM A. KIRKPATRICK, *Secretary*, The Marlborough, Kalamazoo, Mich.

1933

I have a note here from last June of Rog Congdon's election to the post of vice-chairman of the junior engineers' group for professional development of the Providence Engineering Society.

John C. King sends in his change of address to: Robert College, Istanbul, Turkey, explaining it as follows: "The reason for this change is that I have accepted an appointment as instructor in civil engineering at Robert College. In addition, I have an announcement to make which may be of interest especially to my classmates in Course I. Before leaving the United States, the former Miss Mary Ten Broeck Kelly and I were married in Cleveland, Ohio. Now she is engaged in setting up our home near Robert College (in the town of Rumeli Hissar) while I am teaching summer surveying to the engineering students." — Con-

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gratulations John and let's have an interesting letter from you once in a while.

Allan C. Vaughan, who moved to Hartford last year, has given an interesting account of flood experience. It seems that he had a little personal flood, or private flood, in addition to the big flood. He lives on Hawthorne Street in Hartford, and this street slopes down toward the creek at its end. Vaughan's house is the second one from the creek. A week before the big flood this creek overflowed due to the snow having been dumped into it from the city streets and the rapid thaw which melted the remaining snow overnight. The overflow extended nine houses up the street covering Vaughan's front porch and filling the cellar to within six inches of the first floor. Gas and electricity had to be shut off, and Vaughan with his wife and sister-in-law were removed from the house in a police rowboat, and stayed with Mrs. Vaughan's parents in Hartford for three days. They just got back in their house when the big flood arrived and then again had to fall back on Mrs. Vaughan's family. Vaughan said it seemed funny to have a week-end without lights, radio, or entertainment of any kind. They had to depend on an oil range and lots of candles. The reason for his move to Hartford was a connection with Pratt and Whitney, but to our latest knowledge Vaughan is back with the United States Smelting Company in Cambridge.

From the society pages we have the following engagements: Thomas Macy Chadwick to Miss Rebecca Norcross and James Randolph Fox, Jr., to Miss Margaret Kelley. — The following marriages are also announced: Gunter Kohlmann to Miss Kathleen Ryan on May 24; Charles C. Bell to Miss Helen Sheffield on May 23; Edmund H. Lloyd to Miss Mary Brahany on June 5; John Robins to Miss Margaret Notman, also on June 5; John Shea to Miss Lillian Kelly in June; George H. Heuer, Jr., to Miss Myrtle Boulton on June 15; George Bartlett, 2d, to Miss Olive Morrill on July 12; Walter Oppen to Miss Barbara Meigs on July 18; Wallace Tobin to Miss Elizabeth Lovell on August 1; Melvin E. Dolan to Miss Marjorie Hoy on September 1; and Frank F. Gilmore, 3d, to Miss Mary Lee Strickland on October 17.

I am sure I express the Class's wish in wishing you all a very happy future. — It isn't any wonder that Yours Truly can't resist any longer after that long list above. My own wedding to Miss Lucy F. Rauch is planned for just about the time you will receive this issue — November 4. We plan to live at 8344 Lefferts Boulevard, Kew Gardens, Long Island, N. Y.

Let's hear from some of you fellows out there now that the summer weather is over and all you have to do is sit at home and keep your feet warm anyway. — **GEORGE H. HENNING, JR., General Secretary**, Belmont Smelting and Refining Works, 330 Belmont Avenue, Brooklyn, N. Y. **ROBERT M. KIMBALL, Assistant Secretary**, Room 3-107, M.I.T., Cambridge, Mass.

1935

Well, gang, we have quite a long bit of news this time as it has been quite a while since the last issue. However, before I go into the news of the summer, I'll first tell you about a new service I have to offer. Many of you have been wondering how to get in touch with other members of the Class in your neighborhood. I have now arranged my files in such a manner that it is possible for me to get up lists of fellows in any given area, thus, for example, if you are living in Chicago you can write to me stating that you wish to know the members of the Class who live within a radius of 50 miles. I can easily look up this information and send their names to you with addresses. I make only one reservation: If you dare to write in asking for such information and fail to let me know what you yourself have been doing, I'll take steps to have your neck wrung.

As for the news, we'll start first with some newspaper clippings which have been forwarded to me by Professor Locke '96. The following are notes about those who have taken the fatal step. Warren Schott and Miss Dorothea Johnson have announced their engagement. We announce here for the first time that Ed Colby is a happily married man living in Rockville Center, N. Y. The engagement of Everett Beede and Miss Catherine Jones has been announced. Miss Ruth Golding and Frank Lovering are also engaged. Miss Evelyn Patacchiola and Tom Rinaldo were married on Columbus Day. Ken Warren and Miss Elizabeth Street were married on August 29. John S. Holley, XIV, who is with the Scovill Manufacturing Company at Waterbury, Conn., announced a new family arrival in June — a boy at last — which makes his family two girls and one boy. Vin Cook and Miss Doris Jones were married on the 5th of September. Mrs. Floe (formerly Peggy Proctor) and Carl Floe have announced the arrival of a baby girl.

I also have the following news items from the papers. Laurence Cleveland has become assistant professor of drawing at Northeastern. G. A. Revell is now on the engineering staff of Canadian Celanese, Ltd., of Drummondville, Quebec. Revell received his master's degree with us. Henry Kimball has been having quite an interesting experience. At the annual meeting of the "Brotherhood of Live Steamers" Henry exhibited a model train. It is a 36-inch model weighing 40 pounds on the track and hauled five adults behind it on a flat car.

Professor Locke also sent me a couple of memorandums: One states that Malcolm A. Porter recently spent two months on the flotation testing of Cripple Creek ores for the Cripple Creek Milling Company, Idaho Springs, Colo., and is now junior engineer for the Dorr Company, with headquarters at Phillipsburg, Mont. The other one informs us that George C. Dunlap was married early in July. Incidentally Dunlap has become secretary of the Technology Club of Panama.

I have the unpleasant duty of reporting a sad event. Leo Lichtenstein passed away in October, 1935; no details are available. The Class joins in extending its sympathy to Leo's parents.

We'll go on now with the news that the fellows have written in during the summer. I'll start in first with the letters I received earliest, so that if it is necessary that this month's report be cut short, we will be able to hold over the most recent letters for next month. Dick Jarrell has been having an interesting experience. We'll let him tell it himself:

... My correspondents don't pay any more attention to me than I suppose yours pay you. The only ones I have just had news from are Jake Leeder, George Valley, and Bill Parker. Jake went back to Technology studying but did not try to earn his master's. ... I had him out to dinner March 19 and he told me some of the news he heard over at the Institute. Trouble was he forgot most of the names of concerns and addresses. Lempert's address is 106 North Walnut Street, East Orange, N. J., but the name of the big concern he's working for Jake couldn't recall. Shea has gone from the laboratory of Professor Schwarz's '23 to the Watertown Arsenal and Killian has taken her place at Technology. Nordberg is still doing research work on Hardy's color analyzer on his Lowell Textile Institute fellowship. Jake vaguely placed Glenn in New York and Texas Blair in Chicago. When Jake left he promised to look up some of this dope more specifically, but I didn't get a chance to see him again. I'm asking him to write you direct, but he may prefer to do it through me.

"George Valley was the only one to answer my last big batch of letters — only five I'm afraid. That was in December and he wrote he's a part time graduate student there living in the dorms. He says he's probably lucky because Du Bridge teaches there — I suppose we are to infer he has Du Bridge, whoever he may be, in some course. George says ... his parents have complained at not seeing his name in The Review. (Secretary's note: In cases such as this I would suggest that the fellow write in to me directly, or if he should forget, I will be pleased to receive information concerning members of the Class from their parents.) ...

"Bill Parker landed himself a job while home on vacation on Washington's Birthday, went back and threw up his job at National Color Pigment, an unheard of procedure since depression. He's living at home in Keene, N. H. He's still a chemist, trying to devise some means of removing the excess grease from sheepskins imported from South Africa. He can saponify the grease but can't extract it, and as soon as the skins are worked again the grease deposits once more. The effect is an objectionable brown hue to the leather. Bill explains that these sheepskins are being used for cheap fur coats, for toys, and will have a good many more applications in the future. The concern is a branch of the A. C. Lawrence Leather Company (owned by the Swift

1935 Continued

Brothers). During the New England flood Bill's laboratory was washed out, and when they reconstructed it they not only put in a better laboratory but gave Bill an assistant. Bill came down to Boston last Saturday to see me off, saw Lefty Grove win a ball game, visited Technology, and came out to dinner. He had to rush off at 8.30 P.M. to catch a train back to Keene.

"This Cunard White Star stationery which has probably been puzzling you is explained by my going to work temporarily for Adam Hilger, Ltd., London (manufacturers of optical equipment). Dad has been carrying their line for some ten years. I'm supposed to learn the line here at the factory, come back, and push sales in America. Their main apparatus is spectroscopes and spectrographs. Hilger is known in all the large physics laboratories in the world for its admirable workmanship and superior quality. The *Scythia* left Boston April 26 and should reach Liverpool May 4. The first two days we had splendid weather, then a day of fog, and the last two have been stormy, with a strong southeast gale. I'm not seasick yet, but my appetite's not what it was at first. I'll have to look up Stocky while I'm here. Hope to get off a week at least to see something of England by bicycle and perhaps skip over to France, before I have to return some time in September."

Harold Farr, as some of you may already know, stayed another year at school and studied physics. When I last heard from him, in May, he had not yet landed a job. Here's hoping he has one by now. — One of the most interesting letters I received during the summer, due to the distance which it traveled, is from Carlos Lavenas. Carl is working in his home town of Buenos Aires, Argentina. Here is a story of his trials and tribulations: "After graduation I spent a short time around New York giving my last look around, not knowing when the next time would be. I sailed back here at the beginning of August, 1935, arriving here around the beginning of September. The first few weeks were spent in whooping it up as a commemoration of four years' absence from the old burg which has stood my abandonment pretty well. After a while I calmed down and started looking for a job. The gods were on my side as I had to look very little and got a job with Du Pont de Nemours. They were just about to start constructing a fairly big rayon plant. I started out as a rodman in the layout party and have been in the construction from the start, as our first job consisted in the property line survey. Since then I have been raised to instrument man in the layout party. The job consists of sundry doings. All the concrete work (the building is all concrete construction) is being done by a contractor, and part of my work consists in checking the contractor's work. I also have to lay out buildings and sewers and supervise the construction of the sewers, and let me tell you there are plenty of sewers in a plant like that. The plant is scheduled to start operation on January 1,

1937. I hope to be able to work into the operating department or something, as I believe a great future lies in it, since it is a company which is just starting down here and still has to build up its organization. The only drawback to the job so far is that I have to get up every morning at 5 A.M. — what a crime! During the summer it wasn't bad, but these cold dark winter days are bad. There are not very many M.I.T. men around. There is one '27, one '25, and there are a few hovering around '10 to '14 here, but that is all. If any one should be brave enough to venture into these wilds you have my address and I would be glad to see him."

A short time ago Dick Bailey dropped in to see me at the "Y" here in Knoxville, Tenn. Unfortunately, having a poor memory, and not having had the sense to write things down, I don't know any more about him than that he is working in the northern part of Tennessee. — Art Cohen wrote to me a short time ago. He was working up at Quoddy, Maine, until last Christmas, when he left to do a little architectural work with his father. During April he was in Washington looking for work. The first of June he started trying the Resettlement Administration in Bangor, Maine, for a job. He soon located one as an architectural draftsman and has been working on plans from field sketches. — Jim Wiedeman landed a job a few months after graduation with the American Cyanamid Company in their research laboratory in Linden, N. J. His job is essentially purely chemical, working on cyanides in various forms. He finds his work far from monotonous and has been living at the "Y." — Cope MacAllister, who took the VI-A Course, was with General Electric in Schenectady for three months last spring. Having finished his work at school he again returned to them on August 10. — Leo Dee has been working for Fairbanks Morse and Company, Inc., training to be a sales engineer. At present he is writing orders, making up estimates, and handling correspondence. He bemoans the absence of an *Esquire* secretary, as they use dictaphones.

We turn now to a letter from Dick Whitmore which is as follows: "The big item of news was my marriage to Muriel Hooper of Hoboken, N. J., on June 6. We were lucky enough to have Bermuda for a honeymoon spot. The weather, drinks, and stuff were just right. I'm all for more trips to Bermuda though I will admit there's something about the tropics that sort of gets you. Dick Parli, IV, who now is putting Federal Housing on the map down in Washington, proved he could handle major responsibilities by ushering at the wedding in spite of nips and tucks. I am commencing my second year with Westinghouse Lamp in Bloomfield. So far I've done all the lowly jobs — some interesting, some dull — and am now assisting in x-ray tube development work. Things are looking up and it's ten to one that a year from now Westinghouse will still be digging deep into its pocket to find a stray two bits for me each Saturday. Perhaps it will be four bits a year from now. Wife and I hope so.

"Al Creighton seems to be right in his element as supervisor of a test laboratory for Waukesha Motors out in Wisconsin. As usual he is on the 'in' with the boss and this time he's doing it up right, for instead of having just one daughter, this boss has three and each one is a cute looker. Don Wood, the one and only union man in the Class, does better and better with Eastern Steamship's Old Dominion Line. At first he had to toss a bit of freight, but now he just checks this and that while drawing a fancy wage. Now and then the union boys crave excitement and call a strike. Don doesn't kick. It usually means a pay increase. Don was one of the first of our Class to get hooked up after graduation. He has a swell girl for a wife but Don has had to master the art of walking a dog — a Pekingese. He does it quite expertly and will probably be delighted to explain the finer points of the business to any of the other fellows who happen to get a dog along with a wife. Charlie Bowen is a budding efficiency expert with General Electric in Bloomfield. His efficiency work includes the art of working the most distance into his week-end travels. Boston seems to be the favorite spot with Charlie — next to Scarsdale, his home town."

I hope you fellows don't mind so much quotation, but it seems to me that it should be more interesting to you to read the news sent in by the fellows as they wrote it rather than to have me rehash it. In case this style of presenting the news does not meet with your approval some of you might write in and say so.

Our next letter is from Ed Gelus out in Houston, Texas. Here's what Ed had to say about his troubles: "Texas environment and climate are not conducive to any extensive correspondence. For the past several weeks we have been roasting under a better than a 100-degree sun. This hot climate makes you feel drowsy and groggy and at the same time effectively prevents any restful sleep. So rather than try to sleep I'll start this letter in the hopes that by the time I'm finished the rain will have cooled the atmosphere a bit. Since graduating from Tech I've been working with the Sinclair Refining Company at their Houston refinery. For the first six weeks I worked in the pipe gang as a pipe fitter's helper. The work, very exhausting physically, consisted of laying pipe lines, setting up new equipment, scaling and dangling from the side of towers, dodging falling bolts, and listening to . . . jokes related by old, veteran pipe liners. . . . If I learned anything from that job it was how to get along with all types of men without being too friendly with them and without causing any resentment.

"Anyway, after six weeks of hellish labor, I was transferred to the instrument department where I've been ever since. The work here consists mainly of the installation, maintenance, and repair of temperature, pressure, and flow recording and controlling instruments. In addition to this we make and install thermocouples, carry out minor investigations,

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write reports thereon, redesign and build instruments to fulfill some specific purpose, and do a host of other things from building boat parts to repairing the office girls' earrings. The work is interesting and instructive, although it is not the type of work I would want to engage in permanently. As a result I'm on the lookout for something along technical lines. I've tapped Uncle Sam through a civil service examination for a junior chemical engineer's position. After seven months he replied that I was on the eligible list with a grade of 92. Not knowing how many hundreds of applicants there are above me, I cannot say what chance I stand of getting such a job.

"A Yankee is quite a rarity in Texas. Consequently when one does put in an appearance he arouses a great deal of curiosity and wonderment, especially when he opens his mouth and permits some Yankee twang to shock the sensitive eardrums of the poor Southerners. I've been accused of being everything from a damned Yankee to a foreigner. So far I've managed to preserve my Yankee characteristics pretty well, but a few more years of Texas life will probably transform me into a mild, docile, drawling Southerner. I miss Sid Fox and his fiddle quite a bit. Although I've been engaged in quite a few musical activities in Houston (they even have a symphony orchestra) none of them can compare with the early morning, predawn musicales presented in the high-pressure lab under the auspices of Fox and Gelus. I met Jack Flaitz in town several months ago. At that time he was with the United Gas Public Service Company engaged in writing voluminous reports that would make most of these blush with shame."

Our next letter is from Mal Porter: "This is rather late to be writing such a letter as the one enclosed to be forwarded to Stocky (if you don't mind), but, in addition to remaking contact with him and bulling about the same section of Germany, I thought you might have some of the same stuff for The Review. I didn't know you went for travel talks and was rather reluctant to write my experiences. Anyhow there it is if you want to use any of it. It is sort of an open letter and I'm sure Stocky won't mind. . . . I do not believe in the authenticity of your notice on Stan Lane's marriage — especially with the said maiden. Casale and Lane are always up to some friendly prank on the other. This is where Casale has made an all-time scoop. It is absolutely untrue. In fact, in the first place, George Villa, III, has been married for some time and has an eight-pound baby boy. He is in Boston if you wish to verify my statement. Stan has been going with a gorgeous creature in Helena named Charlotte Snyder for about eight months. I received a letter from him not two weeks ago in which he stated how much fun they were having together and the places and things they were going and doing. Clearly Casale has scored. Jimmy Casale, incidentally, is at Magna, Utah, working for the Magna Mill of the Utah Copper Company and cannot be reached easily

by Stan Lane who would by this time like to differentiate Jimmy into partial derivatives."

Here is an excerpt from the letter Mal had me send to Stocky: "Stocky, you are right about Hitler. The people really do love and respect him and are for him. Yet they realize they are under absolute power and often seem fearful they might do something which might displease him or his men. That infernal Hitler salute got on my nerves. Always, everywhere, on the street, in stores, people were giving and returning the Hitler salute. It was very embarrassing not to give it and yet I think it would have been more embarrassing to do so. Southern Germany is a garden land. Every one has a flower garden or fruit garden just out of town. There are boxes of flowers along the street, around the lamp posts, and along the tracks in railroad stations hanging from the rooves. The parks and palace gardens are fairylands. In Germany the palaces and parks are wonderfully kept up. Everything is in perfect order. On the other hand, I was terribly disappointed in Versailles; for a French national shrine, it appears absolutely dilapidated. Their famous Hall of Mirrors could certainly stand quite a bit of polishing of smudges on the glass, and the park at Versailles is all overgrown with weeds. Another way Hitler has endeared himself to the people is with his *Kraft Durch Freude* — strength through joy — societies. It is an organization for every member of the family. All through the summer these groups get together and visit in a body other sections of the country at greatly reduced rail rates and are entertained by the visited section. This has made it possible for tens of thousands of Germans to become intimately acquainted with other sections of their country at a price they can easily afford. These little huts in the Alps are a great institution. They are run by the German-Austrian Alpine Climbers Association. They are situated along the trails about every half day's march in the mountains. You may buy food or food and lodging for the price of a movie over here. In the winter they are open for skiers. The club also keeps the trails well marked in winter and summer and publishes bulletins for the members. I'd best skip over Paris. My money went low and I had to walk everywhere. In consequence I know Paris like a book. I wore holes in my shoes from my daily 15 miles' sight-seeing walk. It was so heart-rending to have to miss the *Folies-Bergère* I cabled my bank for money. The money arrived the day after I left for Havre, so unfortunately I can not report on the most interesting thing in Paris. I err, the unpronounceable Eiffel Tower is the most interesting and beautiful sight in Paris."

That is not the only notice of the mistake about the marriage, for Stan himself wrote the following: "Would you please print a correction of Jim Casale's statement to the effect that I was married recently? It's purely a figment of his imagination — a product of a distorted sense of humor of the Winchellian type. I hope to get even with the viper

eventually." As Class Secretary I hope you fellows will realize that any information I give here is that which is sent in to me by members of the Class, and if there should be any mistakes I cannot, therefore, carry any blame. Sorry Stan.

Our next bit of news is from Charlie Ross, who has been working in Glens Falls, N. Y. Here is what he has to say about his work: "About a week after graduation my present job suddenly came through. It is as research chemist for the Imperial Color Works, Inc., the largest manufacturer of chemical pigments in America. Here I find opportunity to bring into good use all my chemistry and also Professor Hardy's teachings in color measurements. After the constant rush of unavoidable details and oftentimes worries at M.I.T., life here in Glens Falls, with its sufficiency of spare time for both the summer and winter sports available here at the foot of the Adirondacks, is very enjoyable. My mode of living has been very quiet and shows no inclination towards any change in the near future, except, perhaps, to acquire a partner in my suddenly adopted manner of living. But really, I'm a happy person these days. With the permission of my boss (A. G. Aylies '25), I extend to all my '35 classmates an invitation to visit 'Imperial' and also to be my guest at my present boarding house (good food — too) during your next trip to this neck of the woods. Fred Haigh was also with Imperial until last Christmas. At that time he left for Winona, Minn., to take a position with the J. R. Watkins Company. He hopes to be transferred East before long. He isn't a bad letter writer — when he writes!"

I think that Art Linn tops the prize for good humor this time. Here is his contribution: "Here comes one of the battalion of lost Alumni straggling back to the fold with a bit of news and a few personal personalities. The news: Jack Holley, '35's would-be-disciple of Mr. Dionne, is a proud father again. It is seven or eight pounds of embryo gentleman this time, and a potential candidate for the ennobling scientific environment so adequately bestowed on us by dear old Tech. Mrs. Holley (Peg, to you) is doing very well, also. Jack is now with Scovill Manufacturing Company, in Waterbury, Conn., taking the student engineering course right in stride. He says he finds the work pleasant and the emoluments accruing therefrom more materially satisfactory than the purely spiritual benefits gained attempting to sell Diesel engines, his erstwhile daily toil. While the foregoing data are correct to my best knowledge, what follows immediately is only hear-say: Clarence Goldthwaite is in Fall River with some metal concern doing metallurgical work; Jacob Castleman is joining up with the Regular Army, as a second lieutenant in the chemical warfare service; Carson Brooks has finally landed *pristina cum amore sua* — the Aluminum Company of America. — You know all about Tom Graham, so that leaves Bob Spinney and Bob Kennedy . . . of whom I have no information.

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"And the personal personalities: After returning from camp last summer [1935] I went to work for the Narragansett Electric Company in Providence, revamping and extending what they call secondary maps, *i.e.*, maps showing the location of poles carrying the transformer secondary wires. It was only a temporary job, in fact so genuinely temporary that my best efforts could not make it permanent. After it came to an end (in December) I was idle about a week until I found work with the Federal Products Corporation of this city. Here I have been ever since. Here are the details as briefly as I can make them: I started in the drafting room, stayed there about two months, then moved all my equipment (slide rule, triangle, and ruling pen) into our engineer's office. Well, Federal Products makes precision measuring instruments (dial indicator and comparator types) and I was graduated as an electrochemical engineer, so my conversion to a mechanical frame of mind is now in progress. Instead of Beilstein's 'Handbuch,' my bible is now Buckingham's 'Spur Gears.' We are at present redesigning completely our line of indicators so that I feel like Figaro himself: draftsman, computer, quasi designer, lab assistant, and chief speller for the stenographers after my boss finishes dictating a letter. In summary, the work is interesting, the hours frequently long, and the pay low—a typical placement lecture example."

Otto Zwanzig is one of my very few, but appreciated, efficient Course Secretaries. He sent in the following news last spring: "I went up to Boston over the past week-end and managed to unearth sufficient material concerning the whereabouts of some of the VI-A fellows to warrant this letter. So here goes. The most interesting piece of news of the month is the wedding of Herb Matchett of dormitory switchboard fame to Miss Helen Van Dusen. The marriage took place on May 1 and after the honeymoon the couple will reside in New York City where Herb is employed by P. R. Moses, consulting engineer. I also learned that our friend Franklin Yates has been secretly engaged for over a year to a young lady at Radcliffe. Since I only know the young lady's nickname, I am unable to disclose her identity. So much for the Winchellizing, but before continuing with the less interesting news, I should again like to ask the VI-A crowd to drop me a line occasionally at 59 Overlook Avenue, Belleville, N. J. Not only should I like to hear from you, but I should also like to be able to have some more news for this chronicle. The following reports are not guaranteed to be perfectly correct, but they were the most reliable obtainable."

"As for myself, I have been with Public Service Electric and Gas Company of New Jersey since the beginning of February, undergoing the rigors of a training course preparatory to regular employment in the power sales department. The training is very diversified, which can be realized when I recount that since February I have spent some time in a power station,

in the office of the load schedule engineer, and have visited several industrial plants including a jewelry factory, railroad shops, and a linoleum plant. At present I am in the distribution department and have recently been out with pole gangs, line gangs, and am at present out with the trouble shooters. I understand that Earl Peterson has also found employment with a power company. He is at present at the Saginaw, Mich., plant of the Consumers Power Company where he, too, is being subjected to a training course, but in his case in the central station operation department. Bob Greer is with the Army Engineers at Buzzard's Bay. Bill Keefe has been in the test department of the General Electric Company and has worked at several of the company plants since then. Last week he was transferred to the Lynn plant. Last summer Herb Thomas started to work in a drug store after graduation, his job being that of the proverbial 'soda jerker.' Soon thereafter the store decided to develop its ice cream manufacturing upon an extended scale, and Herb was put in charge of the new business. The latter, largely through Herb's efforts, so the story goes, was soon a very flourishing venture, and our hero prospered correspondingly. Evidently however, Herb did not want to make the ice cream business his life's profession, for he had a flattering offer from the Tribular Rivet Company which he is reputed to have accepted. If I'm wrong on the above narrative, sue me."

"Johnny Mooring manages to bear up bravely under the stigma of his official title of statistical psychologist. He is employed by the American Telephone and Telegraph Company and is working on customer surveys being conducted by that company. Johnny is very well pleased with his job, and I heard that Johnny's superiors are equally well satisfied with his work. Carl Boytano is employed by the Anaconda Wire and Cable Company at Hastings-on-Hudson, N. Y. John Thorpe will start to work for the Bell Telephone Laboratories upon completion of his thesis, while Copeland MacAllister will be employed by General Electric, probably starting some time in August. The last bit of news is that Julian Bigelow is endeavoring to further the interests of the Sperry Products Company. Remember, fellows, if I am wrong in any of the above details, let me know about it and we'll see that the correct version appears in a subsequent Review; for that matter let me hear from all of you VI-A fellows."

Herb Small dropped me a line a little while ago. He has been working for Jensen Radio Manufacturing Company, makers of loud speakers. He has only been there a few months and is one sixth of the engineering department.

Our next bit of news is from Paul Germond. Here is his tale of woe: "At the time you wrote to me I was traveling through North Carolina trying to drum up elevator business. At that I had pretty good luck, for the tobacco people were just starting to buy. About two weeks ago I had dinner with Don Gittens and Charlie Hanley. Afterward we met Ed

Prohaska and proceeded toward the Village. We didn't get far, though, before we lost Charlie. . . . That left only three of us but we managed to uphold the Tech reputation fairly well. Ed reports that Dick Purcell is having his usual good time superintending a railroad somewhere in the West Indies. He is the big boss at one end of the 36-mile road. There isn't much to report about my activities. I stayed in the Naval Reserve for about a month and passed it up because of the four-year enlistment required. I could get out by not passing at the end of one month, but could not conveniently do so later on. Anyway, it got me out of a lot of basic training. Since that time I have been working with my father selling Revolvers, and so forth. I find it interesting although I have to use much more of my engineering knowledge than I had looked forward to, for it is not only a question of selling the goods, but also of designing them to meet requirements."

Roy Whitney certainly is getting a fine formal training as is indicated in his last letter: "Now for a bit of my life history. I have been fortunate in that I have managed to keep very busy since we were graduated. I spent the month of June last year [1935] working at the Institute, and in July started the School of Chemical Engineering Practice. The next six months were spent in field stations in Boston, Buffalo, and Bangor, along with several other '35 chemical engineers. We returned to the Institute in January, and I spent the second semester on the staff as assistant to Professor Hottel '24. That work was extremely interesting and instructive. Last spring Professor Whitman '17 offered me a position as assistant director of the Bangor Practice School Station and I accepted. There was just time for me to do the experimental work on my master's thesis between the close of the second term and the start of Practice School, so that worked in very nicely. I expect to be here in Bangor for a year. So far, the work here at the Station has been very interesting. Our first group of students starts work tomorrow morning, and we have been spending the last two weeks getting ready for them. I think the work will be fully as beneficial to me as to the students, and I am looking forward to a very enjoyable year."

Bill Buechner has found work with the A. C. Lawrence Leather Company. He is enjoying his work very much and has been given quite a good opportunity to learn the business from A to Z. The strange part about it is that he was hired as a chemist, which, of course, is right along the lines of a would-be physicist. I had just a short note from Kuo Yu Cheng, which, unfortunately, gave only the information that he is in Cincinnati. Bill Brockett was with the Capitol Chemical Company of Washington, D. C., insecticide manufacturers, until last August. There he learned all about insects and how to kill them. He says that he cannot get into a strange bed any more without looking for bedbugs. He is now working with J. P. Stevens and Company, textile manufacturers. Bill does not

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know exactly what his work will be, or at least he was not very specific in his letter. For lack of a better position to name, let's say he is aiming at the presidency.

Ted Pomeroy has an interesting story to tell: "... Shortly after graduation I started working for the American Sugar Refining Company in a training course which was to last for a year and in which were nine other fellows, all from different schools. During the year we spent a little time in each department of the company, and I was shifted around so that I spent some time working at Baltimore, and at Brooklyn, and at the company's Wall Street office. All in all I learned a great deal about the sugar industry, but not everything by any means, for I am still learning plenty. At present, having finished the training course, I have been placed on the engineering staff of the company's Franklin refinery at Philadelphia. I spend most of my time in the boiler house and power house and am becoming quite a B.T.U. chaser. Little did I suspect while I was down at Tech that I was destined to become a 'sugar daddy' but there's the fickle finger of fate for you. During my travels with the sugar company I have met quite a few of our classmates—most of them I met at the Technology club in New York. A couple of weeks ago I met Don Gutleben here in Philadelphia. Don is on his two months' vacation from Panama (the lucky bum). It was quite a treat for me to meet Don's father, for he is one of the foremost sugar refinery engineers in the country. Don and I spent a very interesting day together, touring the plants; in the morning I showed him through our refinery, and in the afternoon he took me through his Dad's plant. At the end of the day we were both pretty well worn out, but we considered the day well spent. Don is contemplating following in his father's footsteps; it will be no small task, but Don is the fellow to do it."

Our class Navy enthusiast, Whit Stueck, wrote in the following bit of information: "As to my activities of late, they have been quite varied. I was employed as a draftsman with Gibbs and Cox, marine engineers, for seven months after I left school. I got very fed up with the work and felt I was getting nowhere so I quit in spite of the fact that the job paid well. I have been working since February for a boat builder here in Clinton [Conn.]. We are building lots of small boats and I am getting good practical experience in yacht work, but no money to speak of. I bought an old Star boat last fall and have rebuilt her. I am doing quite a bit of racing in what little spare time I have. Some of the racing has been successful and some pretty rank. More hopes for the future. The local yacht club keeps me busy as race committee and I have another job as secretary of the Eastern Long Island Sound Star Fleet. I am also supposed to be associated with Winthrop L. Warner, the yacht broker, as his New York representative. What with a few minor social obligations, I am beginning to think that life at the Institute was pretty easy after

all. I received a circular letter the other day from the crew of 1934, but haven't had time to continue it. There was a lot of news in it about Art Haskins (I hear he is married), Don Wood (I know he is), Allan Mowatt, and the rest. The members of the crew who were in the Class of 1934 seemed to have had all sorts of narrow escapes and physical injuries, and so on, and they must be a sick-looking lot. I saw Gregg Fry and Dick Shaw recently and they are both coming along pretty well with their jobs. Dick is in Hartford, not far from here, and drops in now and then. I heard from Fred Tone today, and he and his wife are still out in South Bend where Tony is working for Bendix Products Corporation and apparently doing very well in their marine division. However, he doesn't like the location and wants to get back in the East. If you will drop me a line again sometime, I will promise to answer it sooner. I have a secretary now and she does (he says quite, but I say damn) well when she doesn't argue with me (I never argue). She is really quite a nice girl (white of him) and I'm trying to kid her into thinking that I think quite a lot of her (the rest isn't very nice so I won't type it, sorry). I wonder what she is really writing on this paper from my dictation." In case the last part of Whit's letter is a bit unintelligible to some of you fellows a bit of explanation is in order. Whit was evidently dictating the letter to the girl friend and she put in a few comments of her own. Since they were rather amusing, and also for Whit's information, I have given them verbatim.

Howard Staley had a bit of hard luck during the summer. His father and uncle were involved in auto accidents, and Howard made a trip out to his home town in Iowa. I am sure the members of the Class who knew Howard well would like to express their sympathy here. Since returning he has been working in Professor Voss's laboratory on some limestone and has had a few jobs to do for outside organizations. He has another year to go yet as a research assistant, at the end of which time he will receive his master's. More power to you, Howard.—I also had a letter from Vin Cook. I mentioned earlier in this report that he and Doris Jones were married. Vin received a Christmas present of a job with Metcalf and Eddy, sanitary engineers, in Boston. He has been on a sewer construction job for them in his hometown of Newton. During the summer he had worked for Burtis Brown, engineer in Boston, on a PWA job. He is at present working on an addition to the plant of Leecouty Products Company. It is a flat slab job and is nearing completion.

Bud Pfanz crashed through with another letter last July. Here's his story: "As you no doubt know the Technology Club of New York gave a Diamond Jubilee Dinner at the famed Waldorf-Astoria in honor of Technology's 75th birthday. Through the efforts of Bob Emery '34 and Milt Brooks '36 I was asked to represent the Class on the dinner committee. So, my fran', it seemed like old times to be rush-

ing around before an affair wondering whether this or that has been done—just like some of the dance committees at Cambridge. At the last minute before the dinner Bob Emery and I were fixing carnations for the invited guests, trying to help (?) arrange the seating, and so on. The dinner was a huge success, as I believe that 500 men and their wives attended. From our Class very few came even though I sent them all a personal letter about it. Don Gittens, Charlie Hanley, Ed Prohaska and his girl, and Alex Frank were the group from '35. Come to think of it I was elected to the board of governors at one of the meetings of the Club. The elections took place so quickly; that is, every one was elected under a blanket vote without even the names being read, as they were in a hurry to get the meeting over with. Mmm, nice though. So far as I know Don Gittens and myself are members of the Club and Chris Rafferty is thinking of joining. Chris, by the way, called me up on July 23 and stated that he is getting along very well with the Pioneer Instrument Company, located in Brooklyn, and that the company has taken out three patents on some inventions or so of his on airplane instruments.

"Vin Ulrich is getting along nicely with the Radio Publications. He sure knows his stuff about radio. He is technical editor of *Radio Today* and quite a lot of service men say they like his discussions of servicing radio better than John Rider, who is 'tops' in the radio field. However, the only difficulty is that people do not know who is writing the service notes. They only know that Rider is not doing it. Gary Garaventa came down from Hartford on the week-end of the 18th to visit Frank Trifari. Trifari is still unemployed. He hasn't any prospects either. Since my last letter I have obtained a position with the Liberty Mutual Insurance Company, and am a safety engineer. My duty is to tour all the large department stores in the city and inspect them as to any existing hazards that might cause accidents. Sam Joroff '34 has recently joined the company as a safety engineer on construction work. Also I occasionally do a little bit of drafting for *Radio Today*. I am the draftsman under Vin Ulrich. If you happen to run across the magazine for May, June, or July, the full-page diagrams are mine. Incidentally, if you run across the magazine for November, Ulrich's picture is on the front, representing a serviceman."

Well, gang, that cleans up the news for this issue. Although this has been quite a long news column, it is due only to the fact that we have had several months since the last issue. The number of letters I have been receiving per week has been falling off badly. All I've got to say about that is if you enjoy reading about the doings of your classmates, just realize that what you are doing yourself is just as interesting. Drop me a line from time to time and let me have the news of your own experiences and those of other classmates you may run across. I'll expect at least four letters per year from each one of you. When you consider the amount of

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work I am willing to put in to get out these reports, you should hardly feel that it is too much trouble to write that much. Give me a break and give the rest of the Class a break by corresponding regularly. Be with you next month. — ROBERT J. GRANBERG, *General Secretary*, Y.M.C.A., Knoxville, Tenn. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road North, Chestnut Hill, Mass.

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It is now almost five months since the Class left the severe halls of Technology and started to carve its name in the hall of fame, shall we say. At any rate, thanks to an efficient crew of Course Secretaries, we have a pretty good idea as to how this business of name carving is progressing.

First, may I mention briefly a few newspaper clippings. The *Herald Tribune* says that H. Page Cross, IV, spent the summer at Southampton, Long Island. Then we read that Leonard P. Blakely, VI-C, 30 Myrtle Street, Irvington, N. J., is engaged to Miss L. Orene Smith of Watertown. Miss Smith is a graduate of Pinkerton Academy. — Dr. Howard S. Turner, Woodward Avenue, Rose Valley, Pa., was married last June to Miss Katherine Swett, daughter of Professor Swett. Turner received his Ph.D. with our Class, in chemistry. Another June wedding was that of Edward W. Nicholson to Miss Elizabeth Cason. Nicholson received his master's degree in chemical engineering.

For Courses I and XI we can report that most of the graduates are employed. To the best of my knowledge only Dobrochowski, Payne, Prudente, Robinson, and Weaver are still out of work. I believe that Weaver is working for his father, but he is looking for a job outside the family. The early part of the summer Bernie Gordon and Dan Burns were surveying in Framingham, but now Bernie is with the United States Engineers' Office in Nashua, N. H., computing and drafting, while Dan is doing flood control work with the same organization.

Lessard, Mabie, and Olson are all working for an engineer by the name of L. M. Hersum of Boston. They are working on the design of numerous small bridges for the state of Massachusetts. Besides the office design, they have also had some field work, surveying the proposed sites. Carl Olson intimates that he expects to be married after Thanksgiving.

As we heard last June, George Ryan started work down in South America on October 1 for the S. P. Trammay Light and Power Company. His friend, Dudley Mylchreest, spent the summer at the office of Professor Barrows'95 calculating dam sections, hydraulic gradients, and power losses. I guess Dudley managed to get in his quota of movies and concerts, besides. He is now at Lehigh University, Bethlehem, Pa., where he holds a research assistantship. Half time is devoted to class study so Dudley expects to get his master's in two years.

A third George is George Payne. The beginning of the summer found him with the Standard Steel Car Company out in

Pennsylvania, but the latest advices place him on the unemployed list. The fourth George of our Course is Elliott Robinson. He spent the summer at the camp of the Burroughs Newsboy's Foundation in Oxford, Maine, expecting to do some surveying. As it turned out, no equipment was available, so he tended the gardens and liked it just as well. The fall found him at Technology for about a week, finishing up his work.

Both Al Bagnulo and Frank Berman are second lieutenants in the United States Army. I understand that Al is doing work connected with sanitary engineering. Jim Carr is doing design work with Timber Engineering, Washington, D. C., an outfit which is attempting to restore wood to its former place as a structural material. Seth Nickerson is with a contracting company by the name of William S. Swift, Inc., New York City. Jim O'Neil, as we expected, is working for William O'Neil Sons Company. Ariel Thomas worked for the summer in Worcester for an engineer by the name of Robinson; now he is at the University of Illinois, holding a research assistantship in sanitary engineering. Bill Shea is with Fay, Spofford, and Thorndike, consulting engineers of Boston, and I spent the summer with the same firm. Bill is getting to be an expert on continuous bridges, because he and Professor Wilbur '26 designed three of them during the summer. They also worked on a hand operated swing bridge. I designed three simple truss spans and worked on the abutments for all the bridges. All these bridges were part of a group of ten which the office designed for the state of Maine to replace structures damaged by the floods of last March. I am now back at the Institute taking all the courses in advanced structures which are offered, and hoping for an M.S. next June.

Jim Patterson, 232 Highland Avenue, Buffalo, N. Y., writes for Course II as follows: "Since the beginning of August, I have been working for the Linde Air Products Company. The laboratory has employed me and has sent me to the East Buffalo Oxygen plant in order that I may gain a little experience. The work is very interesting and, if it may be taken as an indication of that ahead of me, I look forward to a happy future. I have had a chance to become acquainted with the various phases in the production of oxygen as a liquid and as a gas, and with the methods of storing and transporting it.

"When I arrived in Buffalo, I found that there were quite a few Technology men from our Class employed in the city or the immediate vicinity. Working in the same company with me are Reid Ewing and Harlan Hubbard, who is better known as Shorty. Reid was graduated from Tech in 1935 and returned for graduate work last year. He started to work for the lab a month before I did. Shorty finished at Tech in February, having completed all the requirements for his degree at that time, and he joined the company around the first of March. He and I are living together. A few nights after I ar-

rived in town, another Tech man made his appearance. I was sound asleep when I was suddenly awakened and found Darby Merrill, VIII, in the room. We had a bit of a bull session, but I'm afraid that I was too sleepy, because I fail to remember anything that he told me. Shorty just informed me that he is working for the National Aniline and Chemical Company.

"About a month ago, I came home from work later than usual and found that the restaurant I ordinarily went to for supper had long since closed for the night. As I walked into another for the first time, I thought that a fellow seated at one of the tables looked rather familiar. I found a table nearby and sat where I could look at him. It was almost a thrill to see what I thought was a Technology ring on his finger. I rushed through my dinner and then went over to ask him if he had been in Tech with me. He didn't know my name and I didn't know his, but we recognized each other. He turned out to be John N. Pappas, III. We had a very pleasant chat.

"Everyone who comes to Buffalo sooner or later visits Niagara Falls. I had not been here very long before I drove out to them with three others from the lab. The day preceding I received a letter from Bill Hope, IX-B, saying that he was employed by the Moore Research and Service Company, Inc., Niagara Falls. While we were in that city, we stopped at his house and found him just about to leave for the falls himself. He joined our crowd and the five of us went into Canada to see the sights from the Canadian side.

"When the Air Show was held at Buffalo's airport, Shorty and I went to it. We managed to work our way to the front of the crowd to get a better view of things. While we were watching the events, we were a bit surprised to see Henry Runkel, XVI, walking on the field. After we had attracted his attention, he came over and told us that he is working for Curtis Aircraft and kept pretty busy. Although he lives somewhere near my address, I have not seen him again. — There are some more of our classmates in the city, but I have not run into them yet. It is a lot of fun to meet them even though many of them were just acquaintances in school.

"So far I have heard from but one man from my own Course. The fellow who wrote to me is Laddie Reday, who is working for Graton and Knight, Worcester, Mass. That concern manufactures belting and has put Laddie to work in its engineering department. He enjoys his work a great deal. In general, he has been conducting tests and has had to go to various plants in New England to carry on his work. The end of September he was scheduled to travel down to Rockingham, N. C., on another test job."

Jim promises more news about Course II for next month, when he has had a chance to write a few letters now that he is settled down. The only additional news I have to offer about this Course is that Ken Packard is back at the Institute working as an assistant to one of the teachers in the testing materials lab.

Charlie Price, Hotel Wallace, Lebanon, Pa., is Secretary for Courses III and XII. In a letter accepting this position, he tells what he has been doing since last June. Until August 1 he was in summer school at Technology and his final deficiency in metallurgy wasn't completed until the middle of September. He was anxious then to hear if he would get his degree, as he said his position depends upon it. Charlie says: "My job is theoretically that of 'probationary mining engineer' (for Bethlehem Steel Company), although at present I am working as a timberman's helper in the Number 3 mine of Bethlehem's Cornwall Ore division at Cornwall, Pa. We spend nine hours a day under ground, and I haven't any free time until 6 P.M., and I have to be in bed at 9:30, so the fact that the town is socially and academically dead doesn't worry me much. I don't know a soul here yet."

Members of Course IV will have their successes covered by Dave Werblin, 1721 Avenue O, Brooklyn, N. Y. At the time of going to press, I have not heard from Dave; the only news that I can give about this Course is a couple of items which have dropped into my hands. First I understand that Miss Phyllis Needham has finally landed a job with the New England Telephone Company. Secondly, allow me to quote from an article in the September 22 issue of the *Boston Transcript*. The article announces the engagement of Miss Katherine Bosworth Niles of Hundreds Road, Wellesley Farms, to Mr. Franklin Peabody Parker, 532 Beacon Street, Boston. "Miss Niles attended the Beaver Country Day School, St. Andrews University in Scotland, and Sweet Briar College, Virginia, graduating from the latter in the class of 1936. She is at present a student at the school of the Museum of Fine Arts in Boston," says the article. "Mr. Parker is a graduate of M.I.T. in the Class of 1936. . . . Since his graduation he has been connected with Charles T. Main, Inc., of Boston. The engagement was announced at a small dinner given Saturday evening." Congratulations are in order for Frank.

Bob Sherman's letter as Secretary for Course V which follows requires no further explanation: "After several months of inactivity during which I spent ten days in Maine — yes, in Auburn (it is only because Bob especially requests it that I include this crack) — a few days on the Cape, and the remainder of the time home doing such interesting things as preparing for this year, mowing lawns, weeding gardens, and so on, it seems great to be once again back at Tech. Yep, I'm a graduate student now with a teaching fellowship in Course V. As far as the teaching is concerned, it seems to amount to assisting Professor Simpson '16 in analytical lab. Everything appears very promising; since classes have not commenced yet (at the time of writing), I am not in a position to say the same, or its opposite, regarding them."

"Apparently, I'm not going to be separated from fellow classmates for some time to come; several are already back,

more coming when school opens. Freddy Carten has fallen heir, as a teaching fellow, to the position of lecture assistant to Professors Huntress '20 and Ashdown '24 in Organic I; I'm eagerly anticipating the day he will be requested to prepare nitroglycerin. Those of us who have seen Fred at work in the lab can appreciate intensely the ticklish situation.

"Freddy spent a passable summer including a two weeks' stay at Halifax, N. S., with Harry Donaldson, and another week in Dennisport, Mass., recuperating. It seems that Halifax proved to be almost too much for the boys. Then Fred spent a couple of weeks at Fort Wright, on Fisher's Island, with the United States Army. This life of leisure palled upon the lad, so he turned to lugging trunks up three (he insisted upon the three) flights of stairs for the Railway Express Agency at the South Station for the rest of the summer.

"Freddy managed to dig up information about quite a number of the fellows; he suggested, among others, the following bits of information: Donaldson spent two weeks at Fort Devens — also with the Army — with Parkhurst and McMahon, X, then proceeded from one vacation to another, from one place to another. At present, Harry is billing freight with the Railway Express Agency, and according to Freddy, is 'traveling incognito to avoid employers seeking his services.' Joe Ackerman has been working as a mason and gardener, mostly the latter, in Littleton, Mass., but is now back here as a teaching fellow in the Organic Lab. Willie Anslow has been working in a gas station and also mixing chemicals and dirtying apparatus in Professor Milas' lab. Ben Dayton has been at Technology this past summer working on a thesis; he is as quiet as ever. Charlie Saffer, who has been considering the relative merits of the graduate schools of Harvard and some college in New York, has at last decided to do his graduate work here at the Institute. Art Sedoff has been working for Professor Hockett on sugars all summer and then started angling for a fellowship at the University of Iowa. Mitch Sieminski is coming back as an assistant in Course II in textile research. And Barney Vonnegut, who, it is rumored, achieved excellent results in his thesis, plans to return to Technology for graduate work.

"I have a letter here from Henry Herpers in Short Hills, N. J. He says: 'As to what has been going on this summer, I can only say that after six weeks of R.O.T.C. at Fort Monroe, I was almost too tired to do anything for a week. However, as I have no employment yet, I have been busy ever since trying to get employment somewhere. — Seems like everything is wanted except chemists, especially those who aspire to enter the field of geological chemistry. Outside of looking for work, I have been scouting the countryside for minerals, rocks, and so on. Have also done my best to keep Ballantine's stock up high.'

"Atta boy, Henry; don't let them get you down. I've heard rumors to the effect that the Placement Bureau still has you in mind.

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"Mrs. George Kimball, once more intimately known as Alice Hunter, who was married June 22 to an instructor at Columbia University, spent the summer with her husband in the Berkshires, aside from two weeks in August, which were spent cruising to Gaspé, Quebec, and Bermuda. (This is some cruise for two weeks!) She writes: 'You should see us riding bicycles! Yes, I think we should like to! This fall she plans to do apprentice teaching in the Country Day School for girls in Riverdale-on-the-Hudson, N. Y. As yet she does not know what her duties will be.'

"Bud Milone is back at Tech for graduate work. He, too, has a teaching fellowship and is to work in the Quantitative Organic Analysis Lab. This summer Bud worked out in Yellowstone National Park as a self-styled postmaster, where, among other guests, he entertained Professor and Mrs. Huntress. He doesn't seem to mind being back on the ball again, though. — Was I surprised this summer when Louis Stahl dropped in! It seems he is chief chemist at the Stahl Finish Company, run by his father, which, although originally in the leather finishing business, has recently developed an emulsion suitable for doing everything from coating paper to starching shirts. So Louis spends alternate weeks working in the Lab and out on the road selling to paper mills.

"Don Thompson is working with the United States Rubber Company in Passaic, N. J. In a letter written during the first part of August he says: 'Passaic is quite a place, and the United States Rubber, ditto. I am enjoying my work here very much. The work I have been started on is a piece of a research problem under some one. Roughly, it has to do with the determination of metallic sulfides in rubber in the presence of about umpteen other sulfur compounds. To be sure, it has been just like starting another thesis, especially the fact that I have gotten nowhere since starting. Within a week after getting here, I located a fine boarding house in an excellent section of the city. Here I have made many pleasant acquaintances among whom are two research men at our place. . . . The three of us have been having one swell time. In fact, all in all, I've been on the go every week-end and evening since arriving here. Ed Nolan '30, who got work with Merck in Rahway, N. J., and I visit each other about once a week and often go swimming. The weather is unbearably hot here lately, and the mosquitoes as big as bats.'

"Van (Robert Van Patten-Steiger) is hard at work with the Hood Rubber Products Company in Watertown, Mass., as a chemist — I believe he has something to do with production work. There are rumors that cupid has dealt seriously with him at last. I might also add that John Grindell, who dropped out last year, has planned to come back to Tech to finish up his year. Also, Dr. Frederick Watson, who received his degree last June, has obtained a position with Dupont. — I plan shortly to have ready a list of the latest addresses of the gradu-

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ates of Course V, a copy of which will be available to any who are interested if they will drop me a line."

Thus endeth the epistle of Robert M. Sherman, Jr. Bob's address is The Graduate House, M.I.T. Bob included a letter from Fred Assman, 38 Main Street, Rittman, Ohio. Excerpts from this letter follow:

"When my copy of The Review came the other day, I noticed that you were elected Course Secretary, and this reminded me that I ought to write to you. (May I interrupt to say I hope this will be a hint to others who have not yet corresponded with their Course Secretary.) There is a chance that the company will send me to the Paper Institute in Wisconsin. This is a graduate school connected with Lawrence College in Appleton; they give a four-year course leading to a Ph.D. degree.

"I cannot tell you much about the Ohio Boxboard Company, for I have not been in the plant as yet. (This letter was written the middle of August.) Just before I came, the workers went out on strike, and the plant has been closed ever since. A week or so ago, nine of them were sentenced to 90 days for closing the local press, but there has been no other trouble. Of course, no one can tell when the thing will be over. Meanwhile, science marches on! A small lab has been set up in the boss's garage, where two chemists and I have been working on the identification of fibers with the microscope. Samples of paper or dried pulp are formed into water suspensions, and a few drops placed on a slide. When dry, a stain is applied to the fibers to color different types different colors. Besides this work, I am studying several books and many patents." — It appears that Course V has taken to using garages for labs during the past summer. Is the automobile business experiencing a depression because of this?

Nick Leftes, 11 Ward Street, Salem, Mass., reports that he will have plenty of news about Course VI next month. He says there is nothing to write about either Mike Paskowski, who also lives in Salem, or himself because they have not been doing anything. I take this to mean that they are still looking for jobs. Nick has, however, sent me what he calls some real good news contained in a letter from Harry T. Pekin. "I am writing to let you know what has become of me since graduation last June," says Pekin. "About July 1, I went to work as an engineer at the Champion Radio Works in Danvers, Mass. I have been treated very well here and have enjoyed my work thoroughly. I am at present working in the capacity of a production engineer, and as such, run into many different problems every day. This is one of the things about my job that makes me happy, for it enables me to make good use of my technical training and also gives me the opportunity to gain much practical knowledge. I like the personnel very much and am proud to work for such a fine organization and with such fine people. (Harry ought to get a raise for such loyalty.)

"I was married September 13 to Miss Helen Gordon, and went 'honeymooning' in Canada. About a week before the wedding, I met many of our classmates at a party that was tendered me by my friends. Among those present were Mike Paskowski, Champ Norton, and Nick Leftes. — As they say in the good old signal corps, VA." — And what, may I ask, is Champ Norton doing? It looks as though our reporter had let a bit of news escape him.

The news about Course VI-A is almost entirely that everyone is back at school. Outsiders will recall that this is a five-year course. Mart Gilman, Course Secretary, in a letter written September 14, says that all he knows for sure is that Ed Halfmann and he will be back at school. To this list I can add Bill Saylor and Frank Phillips. Bill went to summer school the first part of the summer and spent the second half of the summer at Technology playing tennis, as near as I can gather. He is at school this first term and plans to finish his work in February. Frank is at the West Lynn works of the General Electric for this term.

In a letter dated September 18, Jack Cook acknowledges his election as Secretary for Course VI-C. He writes: "I arrived home from Europe a few days ago and found your letters regarding my secretaryship. I'm afraid it is too late to get any definite material for the November issue from my group, but I'll give you what rumors I've heard and you can publish them as such. Before I left Tech several men had been placed: Oliver Angevine was going with Stromberg Carlson Radio at Rochester, his home town; Carl Hedberg had accepted an offer from the Bell Telephone Labs in New York City; and Morgan Rulon was taking some special courses at the suggestion of his present employers, Philco Radio and Television.

"Jack Ayer is in Chicago with the signal division of the Pennsylvania Railroad (see below). Harry Pekin landed a berth with the Champion Tube works and then, on top of that, went and got himself married (see letter above from Harry). I have an idea Miss Moodey, our course coed, is with the Telephone Company.

"We'll have to get together some time so you can tell me what I missed at Commencement. At the time I was in Ak-Bulak, Kazakstan, Russian Turkestan, waiting for the solar eclipse to take place. Left Russia July 11 and spent five weeks in Germany sampling the beer. Had a little time also in France and Belgium. Gained 18 pounds, met a number of interesting people, and acquired a rather different philosophy of living. Conclusions: War is not imminent; the Russian and German dictatorships are not as harsh as some people would have you believe; American girls and cigarettes are the most satisfying in Europe; Munchener Hofbrau beer is the most delicious beverage ever concocted. — Incidentally, my activities for the coming year include graduate study at the Harvard Engineering School with a master's as the imme-

diate goal. I was fortunate enough to be granted a Gordon McKay scholarship for the purpose."

Charting with Jack brought out the fact that his travels throughout Germany, France, and Belgium were made aboard a bicycle. It seems that on the eclipse expedition he turned out to be more of an astronomer than a radio engineer. This was because the radio apparatus was automatic and took care of itself, whereas the cameras had to be carefully aimed to point at the spot where the eclipse was going to occur. Rains threatened to obscure the sun at the important moment, but just before totality the clouds parted. The large box camera was aimed but a matter of minutes before totality. I guess the trip was exciting all right. Since I have not heard otherwise, I assume Jack is living at home: 16 Belfry Terrace, Lexington.

The fact that Jack Ayer is working for the Pennsylvania Railroad should be removed from the rumor category. I have seen him since he returned from his trip to Europe with the Thorne-Loomis group. Among the sights which the group gazed upon was the largest beer vat in the world. Indeed a worthy object! Jack's work with the signal division has consisted of bonding rails, which takes him right out on the road. His address is Englewood Y.M.C.A., 6547 South Union Avenue, Chicago, Ill.

Ed Pratt, Vanderbilt Hall, Longwood Avenue, Boston, has entered Harvard Medical School this fall. During this past summer he took Professor Harrison's Course 8.34, and was research assistant to Mr. D. Richardson through July. He reports the following for Course VII (all news as of August 20): Miss Kay Shott has a temporary position at the Margaret Pillsbury Hospital in Concord, N. H., doing technician's work there until the regular worker gets back from her vacation. — Ed Knight has gone away to Arizona, his address being: New State Building, Phoenix. He is assistant sanitary engineer there. — Jim Abdou writes he is looking for a job and would like to hear from some of the other members of VII. (In the absence of a better address I can give his home address as 50 Waltham Street, Boston, Mass.)

Ralph Mankowich is entering Boston University Medical School unless he is accepted at Harvard. — At the Esplanade Concerts Pratt saw Steinhurst frequently, and he was still looking for work in the field of vital statistics. — Bill Healey has a job as sanitary engineer with the United States Army. — A card from Louis Proulx, postmarked August 25, says: "Last week I went to work on a temporary appointment with the state health department doing experimental work on sewage treatment." I assume this means the Massachusetts Health Department.

Charlie Evans, 670 Seneca Parkway, Rochester, N. Y., has a bit of news about Course VIII: "Wayne Hazen wrote from Berkeley, Calif., to say that all goes well with him. He was looking forward to a busy year as a teaching

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assistant in the physics lab at the University of California, since there are over 500 students taking the course and only seven teaching assistants. The rest of the fellows will be glad to hear that Wayne took his famous sailboat out there with him on a trailer — also an eight-foot dory. His story is that he made the trip without any capsize.

"Wayne also writes that Ken Cook got through his third operation (T.B.) safely, and that he is back at the sanatorium in New Hampshire until he recovers. That's good news for all of us who knew Ken at Tech.

"Bill Abbott sent a short note saying that he is working at present in the research lab of General Electric at Schenectady. He finds his present work interesting, but is looking forward to some work on heavy equipment which he is scheduled to do in the future. Bill and six other test men have hired a house on the edge of town and are having a great time. Four of the other fellows are from southern schools, and two are from Brazil.

"A third letter was from Carl White who has been living a life of ease down on the Cape for the summer. He found things a little quiet there, so he built himself a small lab and played around with some gadgets employing photocells and thyatrons. With the coming of fall, he has decided to hunt for a job, so in the next letter there may be some interesting news from him. — As for myself, I am working as a research physicist at Kodak Park. My work was interesting at the start, and grows more so every day. We expect to start in soon on a group of experiments concerning the photographic latent image, and I'm fairly itching to be at it. (That term "photographic latent image" is enough to make one itch.) I was at school last Monday (September 14), and ran across Professor Warren '24, who says that all of our Course VIII men but two are definitely placed — that several offers of good jobs came in during the summer with no men available for the jobs. Hence, it should appear that the two should not have much difficulty finding employment."

Continuing along the list of Courses, we come next to IX, headed by E. Henry Cargen, Jr., alias Smokey, alias Hank, and so on. This one has made for himself a reputation as an extremely infrequent letter writer; hence, I am not surprised that I have not heard from him during the past three months. However, a little bird has told us about some of these cut-ups, and I'll pass the information on to you. First, there is Smokey, himself. Our class baby finally passed his 21st birthday and then set about earning his salt. He is working for J. Stirling Getchell, 405 Lexington Avenue, New York City.

Jack Austin, the noble President of our Class, also does not believe in writing letters, it seems. Since his address is given as 38 Kilburn Road, Garden City, Long Island, I think I know what is occupying his time. Johnny is working up from the bottom in the First Boston Corporation,

New York. At present, his position is that of runner, which consists of traveling in New York's subways with a leather satchel strapped to his wrist. Before going to work, Jack spent two weeks vacationing at Army camp.

Scott Rethorst, 23 Craig Avenue, Piedmont, Calif., is employed by the Columbia Steel Company of San Francisco. I hear, also, that Sam Loring is working in Hartford, Conn. — Dick Odiorne is writing advertising copy for Sutherland and Abbott of Boston. He had a brief vacation the first part of June out in Ohio and then started work. Dick has been writing ads for thermostatic heat controls and polaroids applied to the ophthalmic field, among other industrial accounts. He has a good time making up catchy headlines about the products he is advertising. The position seems to combine writing ability with the M.I.T. technical background. Dick, Bill Robinson, a member of our Class who transferred to Harvard after his freshman year, and I used to lunch together frequently the past summer. Robbie is writing ads for Little, Brown, publishers.

Course X is about in the same position as IX; I have not succeeded in getting any word from Elwood Koontz, 1863 Cadwell Road, Cleveland Heights, Ohio. El is working for the Reliance Electric and Engineering Company of Cleveland. The company gives its recruits a training course which takes them into the various phases of the business. Most of the summer El spent on the test floor working nights and week-ends checking motors. He attended the Phi Gamma Delta Convention before commencing work. — Vernon Osgood is another one of those fellows who went to Army camp; Ossie reports a good time had in Connecticut. Along with other members of our Class, of whom I can name only Jim Vaughan, he is taking graduate work in the school of Chemical Engineering Practice. The summer found his group working at the Merrimac Chemical Company in Everett.

For Course XIII, I have received two letters from Art Wells. He has been working in the passenger department of the Colombian Steamship Line, 17 Battery Place, New York City, since the middle of June. His letter dated September 9 gives all the news as follows: "Warren Sherburne, Jr., and Edward B. Rowe, Jr., are both working at Newport News Shipbuilding and Dry Dock Company, and are living at 115 Harbor Drive, Indian River Park, Hampton, Va. John R. Graham and his wife also live in Hampton, and John works at Newport News Shipbuilding. Rowe is located in the fitter's department and Sherburne and Graham are both in the weight estimating division of the hull drafting department. — C. Arthur Mayo, Jr., is working at Bath Iron Works, Bath, Maine. David M. Cooper is also working at Bath Iron Works, and he and his wife are living in Bath. Both Mayo and Cooper are located in the engineering department. — Gordon S. Donnan is working for the United Shoe Machinery in Beverly, Mass.

"John G. Stapler is working in the operations department of the Munson Steamship Lines, 67 Wall Street, New York City. He is living at the Gansvoort, 95 Christopher Street, New York City. John will probably go to sea on one of the line's ships this fall, stopping over for a spell in the company's offices at Buenos Aires and Rio de Janeiro. — Charles R. Miller is now working for the Luckenbach Steamship Line and will probably work for a spell in several different departments of the company this year. He is living in Brooklyn, N. Y. — Harrison S. Woodman left in June for a trip eastward around the world and planned to return some time the last part of October. He will probably be located in New York after he returns. — Please excuse the sketchiness of this letter. I am getting ready to catch a train. I am sailing aboard the Colombian Line steamer, *Haiti*, tomorrow noon and must get aboard tonight. I will probably be at sea about five months, part of the time on the bridge, part of the time in the engine room, and part of the time in the purser's department. After that I will take a spell in the operating department. I have been in the passenger department all summer. I will be away from New York for 18 days each trip and will be in New York only four days between trips. . . . The trips go to Haiti, Jamaica, Colombia, and the Canal Zone."

I should judge that the Course XIII boys were having a pretty good time for themselves sailing all over the world. Included in this good time should be Carl Engstrom, who, according to the *Boston Traveler*, had a position this summer on a Newport, R. I., yacht along with other college students.

Jack Hamilton, XIV, Union Carbide and Carbon Research Laboratories, Box 580, Niagara Falls, N. Y., bats 1,000 by reporting something about every member of his Course, even though some of the news may not be very recent or definite: Harold A. Brown, 766 Main Street, Worcester, Mass., is with the American Steel and Wire Company in that city. At present he is doing routine steel analyses in their control lab, but he expects to get into the production end of the business and go on shift work. — Richard B. Hitchcock, Revere Copper and Brass Company, Rome, N. Y., has started as an observer in Revere's research division and expects to be given some original work to do. Jack says he has one more item about Hitch which will be appropriate for publication in a couple of months. Now he has us all guessing.

Word from Mort Kanner, by way of Brownie, says that he has accepted a position as a research assistant at Princeton. — Richard S. Robinson, Mathieson Alkali Works, Inc., Niagara Falls, N. Y., is in the research department doing some very secret electrochemical research and can say nothing about it at present. His first long train trip was to the falls, and he sat up in a coach all night, scared to death lest some one steal the clothes off his back! — The latest information from Wade Ellington dates from the day after

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Commencement, when he was staying at the "Y" in Woonsocket, R. I., temporarily, while looking for a job. He then hoped to be able to return to the Institute in the fall for his degree.

Here is what Jack has to say about himself: "My position with Union Carbide is that of research assistant. I am sort of head stooge and engineering advisor to Dr. W. W. Hawes, who worked with Professor Scatchard, I believe, at Tech in 1930-1931. We are working on a problem in physical chemistry having to do with reactions at high pressures. The field is almost entirely unexplored, and, because of the nature of the problem, I am permitted to say nothing more about it. Just another of those industrial secrets, except that we are having nothing to conceal as yet. But you know more about it now than I did when I came out here. I may say that the main problem is extremely interesting, but some of the auxiliary work is pretty monotonous."

Bill Garth, 2 Joy Street, Boston, apparently is being overworked at the Boston Manufacturer's Mutual Fire Insurance Company because he hasn't found an opportunity to send any news about Course XV. I finally had to call him on the phone and found that he worked every evening with two reports to get out that very night. The best he could do was to promise some news three days after the copy was due at The Review office. I shall therefore, include here what little I have about the Course, and Bill's communication will appear next month. I quote briefly from a letter written the last day of July by Harry Essley, 1863 Cadwell Road, Cleveland Heights, Ohio: "After Commencement and a ten-day visit with my sister in Narberth, I came to Cleveland on the first of July to start work with the Reliance Electric and Engineering Company. It is a comparatively small concern which manufactures high-grade industrial electric motors, which it sells to textile and paper mills, machine tool and automobile manufacturers, steel mills, and so on. Also starting as apprentices are four others of this year's crop of graduates: one from Purdue, Case, and Michigan, and a very good friend of mine from Tech. (The latter is El Koontz). We all fit well together and are having a fine time learning the game.

"For eight months, the first of which has already passed, we shall undertake a training course dealing with the manufacture and design of motors and the office routine accompanying their building. We each shall spend a month in eight different departments in which there are planned schedules of projects, problems, and reports, so that our study is being well guided. After the training course, two or three will become salesmen in any of a dozen different branch offices throughout the country and the rest will stay at the plant as design or production engineers. As yet there has been no announcement of future assignments. . . .

"During the past month, I have been on the test floor, learning to hook up motors, keep away from live wires, and asking lots of foolish questions. Fortu-

nately, the testers have endured all patiently, and I have made some good friends. The only drawback is the necessity of getting up at six o'clock in the morning to be on the job by seven. Next week, however, I shall be in the drafting room and work on gentlemen's time. The above address is that of the A.P.O.P.M. House (Association for the Promotion of Other People's Matrimony), where I am living with eight other fellows ranging in age from 20 to 30 years. We rent a large furnished house in a rather nice section of an old suburb. A colored couple cooks, cleans, presses suits, and so on. With so many fellows chipping in and cheaper prices in Ohio, we are able to live very reasonably despite all the conveniences.

"Cleveland is proving rather interesting. Just before the first of July, there was a large dance given by 12 Cleveland *débutantes*, one of whom was the boss's daughter. So we new boys all had invitations to a very swanky affair of some 600 people — nice country club, two bands, three o'clock breakfast, and so on. We also spent the Fourth swimming and playing tennis at the boss's country place." — I suppose by now, many more interesting things have happened for Harry and El. Perhaps, next month will bring forth another account of the doings of the A.P.O.P.M.

And here is good news about Tom Smith, 7319 Chappel Avenue, Chicago, Ill. He is now the proud father of a baby girl, born on June 28, eight pounds, four ounces. It appears that Tom's daughter will be the one to be crowned with the title of class baby. Anyone else wishing to establish a claim to the title should communicate with the Secretary immediately so that there may be no pretenders to the throne when the coronation takes place. Smith is assistant production manager for Clayton Mark and Company, Chicago. — Brent Lowe is down in Waterbury, Conn., working for the Scovill Manufacturing Company, the same firm he was employed by after his junior year. Brent spent the first part of the summer in Europe with the Thorne-Loomis tour, went to Maine for a week with a Harvard botanist, and then vacationed with his aunt in New York state.

Way back last May, the engagement was announced of Bob Worden to Miss Annette Field of Fresh Pond Parkway, Cambridge. His *fiancée* was a sophomore at Wellesley College, and I understand she will not return to school. Bob is working for the Campbell soup people down in New Jersey. — Fletch Thornton is working for the soap company in the time-bonus department. The story goes that after Fletch had been given a time and motion study problem, all the girls who were working at the job in question were fired. At time of last reports, Thornton was sponging on Harry Hazelton, 5379 Waterman Avenue, St. Louis, Mo. — Al Horton is right here at the Institute, and I see quite a bit of him. He is assistant to President Compton with a room of his own at the President's Office. Al sits behind a large desk, tends to the

mail, and handles other routine work. He is another one of these fellows who keeps his nose to the grindstone after the five o'clock whistle blows.

The dope on a few members of Course XVI is provided in a letter from Bus Schliemann, 47 Chapel Street, East Hartford, Conn. He writes: "The first and most important news I have is the marriage of Jack I. Hamilton on July 25 to the former Miss Peggy Lawrence of Woods Hole, Mass., who attended the Leland Powers School of Drama on Bay State Road in Boston. (Leland Powers is but one block from Ham's fraternity, where he lived his four years at Tech.) Ham is working as an apprentice engineer for the Chance Vought Aircraft Corporation in East Hartford, Conn. (The road signs call it the aviation center of the world. Beside Vought, Pratt and Whitney engines, and Hamilton propellers are manufactured here.) Ham is helping to put out 15 of the new Corsairs for Argentina, helping to fill an order for the government for a good number of the new low-wing scout bombers on which Vought is now going into production. A single seater fighter is now down in South America rounding up a few orders. And just to keep busy, Vought has the job of building the wing of a new four-engined seaplane bomber, carrying ten 1,000-pound bombs, for Sikorsky. Ham's new address is the Centennial Apartments, Manchester, Conn. (five miles east of East Hartford). The other Technology man working in the same job as Ham is myself. Between us we manage to build up the reputation of Tech for the boys who are here from Michigan, Washington State, New York University, and the Naval Academy.

"Dorian Shainin is working for Hamilton Standard Propeller Company of East Hartford. He is at present in the propeller selection department, where he uses about 30 charts in place of the two we used at Tech. He also has the job of passing on to Hamilton's licensees all the new dope on prop manufacture. He is living in town with Sam Loring, IX. — The 15th of August, I saw Dick Koegler down home in South Orange. He was leaving the next morning for the Coast where he has a job with Consolidated. He had just finished a hard day working on a new acquisition, a '29 Ford. From experience I wish him much luck on his trip to the Coast. He had been up to Elmira, N. Y., at the National Gliding and Soaring Meet, where the Aeronautical Engineering Society of Tech came in with \$180 and second place in the group competition. One of our boys made what is close to a record distance flight for secondary gliders of the Franklin type. Koegler retired from the presidency of the A.E.S. this year and his successor, Jack Wallace '38 has a real task ahead of him to keep the club going as Dick did.

"Several weeks back, Bob Lutz dropped into town for interviews . . . He had been required to take the aeronautical summer course this summer and then work on his thesis. But now that is past and he is zig-zagging across the country from Boston to his home in Kansas City,

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hitting all the aircraft companies on the way in search of the job that is waiting for him. Good luck and hopes that the next word from him tells of the job that he has found. — Word from Yank Spaulding comes from Coral Gables, Fla., where he is working in the maintenance department of Pan American Airways. He says the weather is warm and the girls fine or *vice versa*. He didn't state exactly what his work was, but we will get more next time. — Labor Day I saw Hen Runkel. He had flown home for the weekend from Buffalo, where he is in the engineering department of Curtis Aeroplane Company. He is mighty well satisfied and is well on the way toward becoming a millionaire with plenty of overtime to keep him busy evenings and to swell the pay check. Koegler had dropped in on him on his way to the Coast. Runk also provided news that Joe King is also working for Curtis in a similar position."

Dick Hickman, 305 West Clinch Avenue, Knoxville, Tenn., has covered Course XVII pretty completely. I quote from an edited version of his letter: "Charlie Betts, Y.M.C.A., 175 Division Street, New Rochelle, N. Y., has written four times this summer and has had plenty of news to tell. Very shortly after graduation he went to work for 'Selective Residential Construction, Inc.,' an outfit tied in with Johns-Manville, and using a great many of the latter's products in its houses. Augustus Q started in as an architectural draftsman in the New York office, and has since been promoted to a field job and supervises all surveying in connection with lot sites. His goal is superintending or bust — and he won't bust. The rest of you fellows in XVII will get a chuckle in reading this excerpt from Charlie's latest. 'My bachelor ideas and principles received a severe jolt for last week I met one of the grandest young ladies it has been my privilege to know. No, it isn't serious as yet — but I still can think she is swell.' Good stuff, Charlie, but who would have thought it of you! A final word about Charlie's job. The company is an extensive one that plans its housing activities in detail, using precutting and preassembling methods wherever possible, and is rigorous in its expediting.

"Art Carota wrote he has landed with the Northeastern Construction Company in Wilmington, Del., and puts in his time checking materials, timekeeping, recording labor costs, and so on. Carrots speaks highly of his 'super' and is learning a great deal from him. Earlier news of Art from Angie Tremaglio in Connecticut tells of a detour into the ice cream business during the earlier part of the summer, while laying plans to break into construction. Judging from the heat down South this summer, he certainly knew what he was about. — Dick Collins has returned to his post on the staff of the architectural drawing division of Tuskegee Institute, Alabama, after spending part of the summer at Technology. Some 400 freshmen have descended on Tuskegee

since his letter of September 7, so I imagine he has his hands full passing on the gospel of Professors Tucker '92 and Voss '32. — Dick Halloran has been working with A. W. Lawson of Boston, as his assistant, and also trying his hand at keeping the books for the home-building firm of Lawson-Brackett Company. He thinks accounting for these construction loans is some fun. Dick reports that home building is reaching large proportions up there in Boston, and that in the real estate offices it is said that a boom in real estate may happen next spring.

"First prize for jobs held since June goes to Sebbly Mazzotta, who has had two different ones with Merritt, Chapman, and Scott on bridge work in Connecticut and is now with the post-office-building Tremaglio Brothers, being assistant 'super' on a job in West Haven: another post office. — Bill Mullen's mother has good cause to sing 'Oh, where is my wandering boy tonight?' About the middle of July, Bill went to work for the Morton C. Tuttle Company on a mill building job in Rockville, Conn. As assistant engineer, his work consisted of running lines and setting grades, and of making himself generally useful. Later, I received a letter from him in Austin, Texas, where he is personal bodyguard to the reinforcing steel for the same company on a big paper mill job which includes '11 or 12 buildings, railroads, a dock, a reservoir, kilns, tanks, and what not.'

"Angie Tremaglio and Johnny Viola have both written to tell of their work with Angie's firm. Since school closed, an \$8,000 nurses' home in Waterbury and a \$70,000 post office in New Haven have had XVII '36 carved on their cornerstones by this pair. — There has been no direct news from Leventhal, Lukofsky, Sawyer, Schoettler, and White, but it might be in order to do some 'guesstimating' in these cases. Bob Leventhal probably finished his surveying work at Camp Technology this summer and will surely have landed a job by the time this appears in print. Both Bob Sawyer and Luke are back at school taking graduate work. Ten to one, N. K. White is with his dad's outfit and spending all the free time he can get roughing it in Maine. Schoettler is the dark horse this trip, but I hope to have the low-down on him next month.

"My job as draftsman in the engineering design division of the TVA is certainly O.K. I've spent considerable time on stability and cost calculations for a series of trial sections for the Chickamauga Dam. Lately, we have made detailed studies of the rock surface and underlying cavities on the spillway and power-house areas. Over Labor Day, Bob Granberg and I made a 1,100-mile trip through the valley to see several of the TVA dams, existing and under construction. The trip really was fine. We saw all there was to be seen at the TVA jobs and also went through the nitrate and phosphate plant at Muscle Shoals — usually a

difficult place to enter, but the boss's letter of introduction did the trick." Another trip which Dick took earlier in the summer was to Norris Dam, which is a short bus ride from Knoxville. He was enthusiastic about that also.

Eli Grossman, 26 California Road, Mount Vernon, N. Y., crashes through with the following flashes about Course XVIII: "Ken Arnold took a bicycle trip westward, and has been working at odd jobs since when I last heard from him, July 23. — Edward Christopher, who is interested in actuarial science, took a trip down to Washington and then to Pennsylvania. When he returned, he settled down to look for work. He went from one agency to another, saw actuaries, janitors, brokers, and low-brow business men for about a month, when he landed a job with the American Mutual Liability. He resigned from there very shortly, and was offered two new positions in casualty insurance and one in life insurance. Being mainly interested in life insurance, he accepted the job in the actuarial department of the John Hancock Mutual Life Insurance Company, Boston. This is one of the best companies to work for in this line.

"Philip Di Salvatore was offered a summer job with General Motors, but decided to go to New Jersey State College for some courses in education. He has been admitted to Princeton University where he plans to work for a higher degree in mathematics. Soon he will have to take a comprehensive reading examination in French and German, besides one covering four years of math given at Princeton. — Douglass Hawks, an actuarial student, has a position in the mathematical section of the Connecticut Mutual Life Insurance Company in Hartford. This is also a fine company. — Last I heard of Brockway McMillan is that he planned to come back to Tech for a higher degree.

"Elmer Davis has a swell job with the Columbia National Life Insurance Company in Boston. The young actuarial student figures the new rates, reserves, and cash values of all the policies which come in to be 'renovated.' — As for myself, another actuarial student, I visited over 30 insurance companies when I landed a temporary job with the Manhattan Life Insurance Company in New York City. My work consisted mainly of calculations in connection with a new rate book. This job is almost over, and there are very bright prospects for another temporary actuarial position." — If you can land one temporary job after another as Eli plans, you are lucky. We hope he strikes a permanent position soon.

And so, my friends, we have completed our tale of the doings of the Class since last June. Let us hear from those who have not yet written, and let us hear the latest news from those who have written. Address either your Course Secretary or write directly to me. — ANTON E. HITTL, Secretary, Graduate House, M.I.T., Cambridge, Mass.

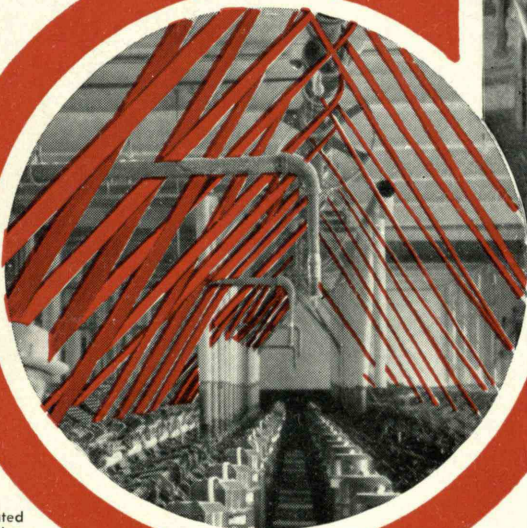
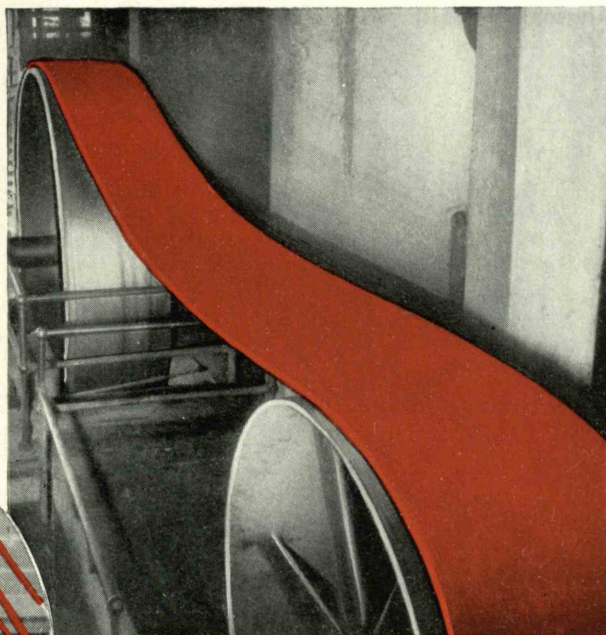
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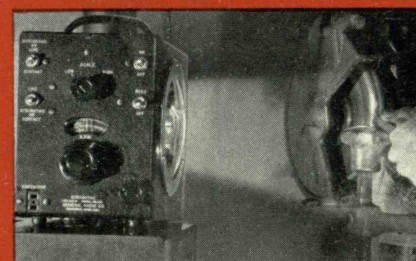
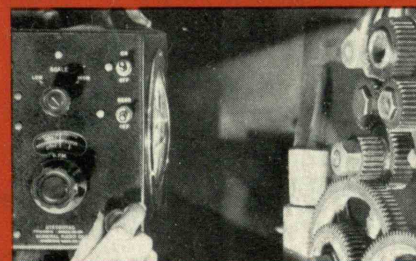
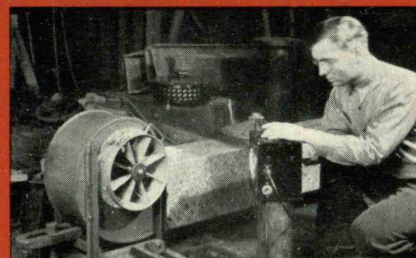
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